CONTRA COSTA COUNTY

V. 2



DRAFT ENVIRONMENTAL IMPACT REPORT

FOR THE

TASSAJARA PROJECT

COUNTY FILE GPA #930008 and RZ #943022

SCH #93043038

MARCH 1997

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DRAFT ENVIRONMENTAL IMPACT REPORT

FOR THE

TASSAJARA PROJECT

COUNTY FILE GPA #930008 and RZ #943022 SCH #93043038

Prepared For

CONTRA COSTA COUNTY
COMMUNITY DEVELOPMENT DEPARTMENT

MARCH 1997

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Glossary of Commonly Used Abbreviations

BAAQMD Bay Area Air Quality Management District BART Bay Area Rapid Transit District f/s feet per second BMPs Best Management Practices FEMA Federal Emergency Management Agency BMWD Berrenda Mesa Water District FESA Federal Endangered Species Act FHWA Federal Highway Administration CC&Rs Covenants, Codes and Restrictions CCCSD Central Contra Costa Sanitary District or GHAD Geologic Hazards Abatement District
BMPs Best Management Practices FEMA Federal Emergency Management Agency BMWD Berrenda Mesa Water District FESA Federal Endangered Species Act FHWA Federal Highway Administration CC&Rs Covenants, Codes and Restrictions
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FHWA Federal Highway Administration CC&Rs Covenants, Codes and Restrictions
CCCSD Central Contra Costa Sanitary District or CHAD Geologic Hazards Absternant District
CCCSD Central Contra Costa Sanitary District of Citado Geologic Hazards Abatement District
Contra Costa County Sheriff's Department GPA General Plan Amendment
CCCTA Central Contra Costa Transit Authority gpd gallons per day
CCTA Contra Costa Transportation Authority
CDBG Community Development Block Grant HCM Highway Capacity Manual
CDFG California Department of Fish and Game HOME Home Investment Partnerships Program
CDMG California Division of Mines and Geology HOV high-occupancy vehicle
CEQA California Environmental Quality Act HUD United States Department of Housing and
CESA California Endangered Species Act Urban Development
cfs cubic feet per second
CHP California Highway Patrol I-580/680 Interstate 580/680
CIP Capital Improvement Plan ITE Institute of Transportation Engineers
CMA Congestion Management Agency IWMP Integrated Waste Management Plan
CMP Congestion Management Program
CNDDB California Natural Diversity Data Base L ₁₀ Statistical Noise Descriptors
CNEL Community Noise Equivalent Level Leg Average A-weighted Noise Level
CNPS California Native Plant Society L _{dn} Day/Night Average Sound Level
Corps United States Army Corps of Engineers LAFCO Local Agency Formation Commission
CSA County Service Area LAVTA Livermore-Amador Valley Transit
Authority
dB Decibels LAVWMA Livermore-Amador Valley Water
dBA A-weighted Sound Level Management
DEIR Draft Environmental Impact Report Agency
DERWA DSRSD/EBMUD Recycled Water LOS Level of Service
Authority LPS Land Preservation Standard
DOHS California Department of Health Services
DSRSD Dublin San Ramon Services District mgd million of gallons per day
du/acre dwelling units per acre ML Multiple-Family Residential - Low
DSPP District Stormwater Pollution Program Density
DWR California Department of Water Resources MM Multiple-Family Residential - Medium Density
EBDA East Bay Dischargers Authority MSL Mean Sea Level
EBMUD East Bay Municipal Utility District MTC Metropolitan Transportation Commission

MU	Mixed Use	SRVUSD SR	San Ramon Valley Unified School District State Route
NOP	Notice of Preparation	SV	Single-Family Residential - Very Low
NMWD	Natomas Mutual Water District		Density
NPDES	National Pollution Discharge Elimination		
	System	TAC	Technical Advisory Committee
NURP	Nationwide Urban Runoff Program	TDM	Transportation Demand Management
		TSOs	Traffic Service Objectives
O&M	Operation & Maintenance	TSM	Transportation Systems Management
OS	Open Space	TVPOA	Tassajara Valley Property Owners Association
PD	Planned Development	TVTC	Tri Valley Transportation Council
PDP PG&E	Preliminary Development Plan Pacific Gas and Electric	TVTP	Tri-Valley Transportation Plan
PM-10	Particulate Matter, 10 Micron	UBC	Uniform Building Code
PR	Parks and Recreation	ULL	Urban Limit Line
PS	Public and Semi-Public	USEPA	United States Environmental Protection
PUD	Planned Unit District		Agency
		USFWS	United States Fish and Wildlife Service
RWQCB	Regional Water Quality Control Board	USGS	United States Geological Survey
SBA	South Bay Aqueduct	V/C	Volume to Capacity
SH SIP	Single-Family Residential - High Density State Implementation Plan	VCCC method	Volume to Capacity - Contra Costa County
SL	Single-Family Residential - Low Density	vphpl	vehicles per hour per lane
SM	Single-Family Residential - Medium	WID	Woodridge Irrigation District
	Density	WTP	Water Treatment Plant
SOI	Sphere of Influence	WWTP	Wastewater Treatment Plant
SRVFPD	San Ramon Valley Fire Protection District		

4.8 VISUAL QUALITY/AESTHETICS

SETTING

Regional Visual Resources

Southern Contra Costa County is bounded on the east by the Diablo Range landform which consists of rolling and steep hillsides, rock outcrops, valleys and ravines, and the Las Trampas hills on the western boundary. In between these two landforms are two major valleys: the San Ramon and Tassajara valleys. These two landforms form a backdrop to the existing urban development which has occurred on their respective lower slopes, in the San Ramon Valley, and the northwestern segment of the Tassajara Valley.

Dense vegetation covers the steeper, east-facing ridges of the Las Trampas hills, while the vegetation on the west-facing slopes of the Diablo Range is less dense and consists primarily of an oak-scrub plant community. The lower, gently-sloping foothills have been used extensively for cattle grazing, dryland farming and limited row crops. Intermittent streams cut through the hills, providing some contrast to the grassy slopes, particularly when lined with riparian vegetation. Scattered oaks dot the hillsides. Traveling in either direction along key north/south routes, the visual prominence of both landforms provides a soothing relief to the rapidly growing urban/suburban communities.

TVPOA Planning Area Visual Resources

Camino Tassajara and Tassajara Creek bisect the property. The Tassajara Valley is located between the Diablo Range and a prominent ridge that forms the western spine of the project site. The TVPOA site is topographically diverse, consisting of steep rolling hills, narrow ravines and valleys, creek channels and several, small broad valleys formed by alluvial fans. Two branches of Alamo Creek cut across the northwest portion of the project site, joining into one creek corridor near the northwest corner of the property. Tassajara Creek is deeply incised, entering the northeast portion of the project site on Finley Road and turning south at Camino Tassajara. The creek continues to flow in a southerly direction, crossing under Camino Tassajara south of Highland Road. Portions of the creek channel are heavily vegetated, whereas in areas where the creek flows through grazing land, vegetation has been mostly removed.

Figure 4.8-1 identifies the location of the photos depicted in Figures 4.8-2 through 4.8-21. These photos illustrate the topographic features of the project site. The main valley form is very strong along Camino Tassajara as shown in the photos in Figure 4.8-2. Many smaller valleys run perpendicular to the road, up into the hillsides as shown in Figures 4.8-3 and along county roads such as Finley, Highland and Johnston. The photos also show that the toe of the slopes at the sides of the main valley are fairly strong and are visible in most places where the valley and the hills meet. The rounded hills occur in a series of receding and interlocking planes, extending down very close to Tassajara and

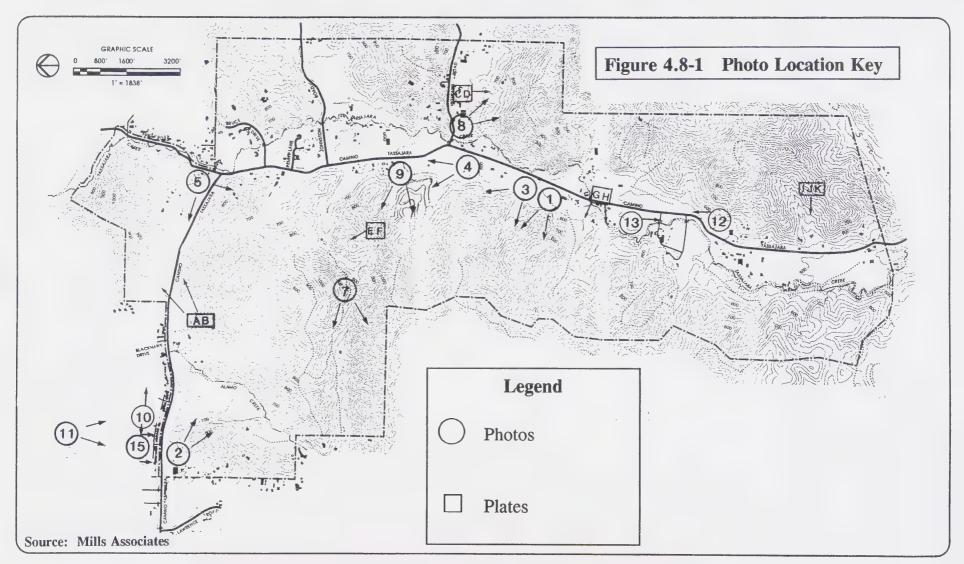


Photo 1

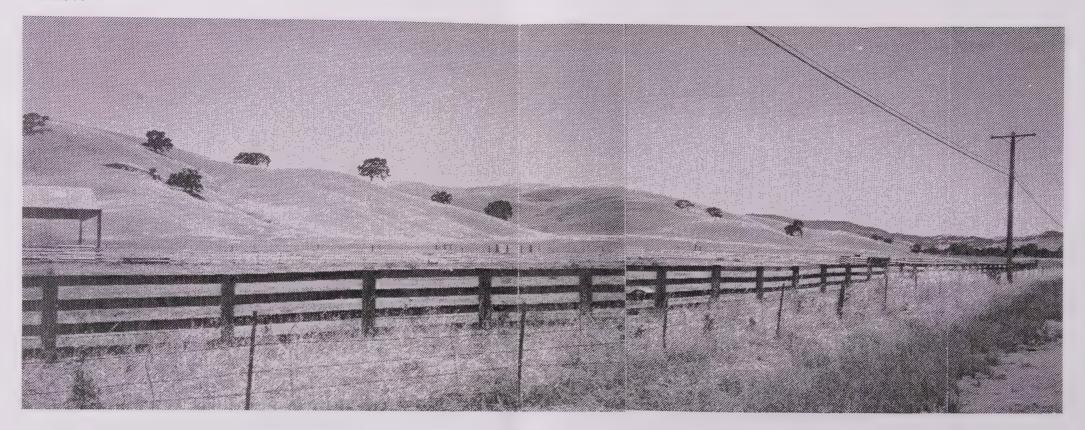


Photo 2



Figure 4.8-2 (Photos 1 and 2) Views from Camino Tassajara depicting on-site topographic features

Photo 3



Photo 4

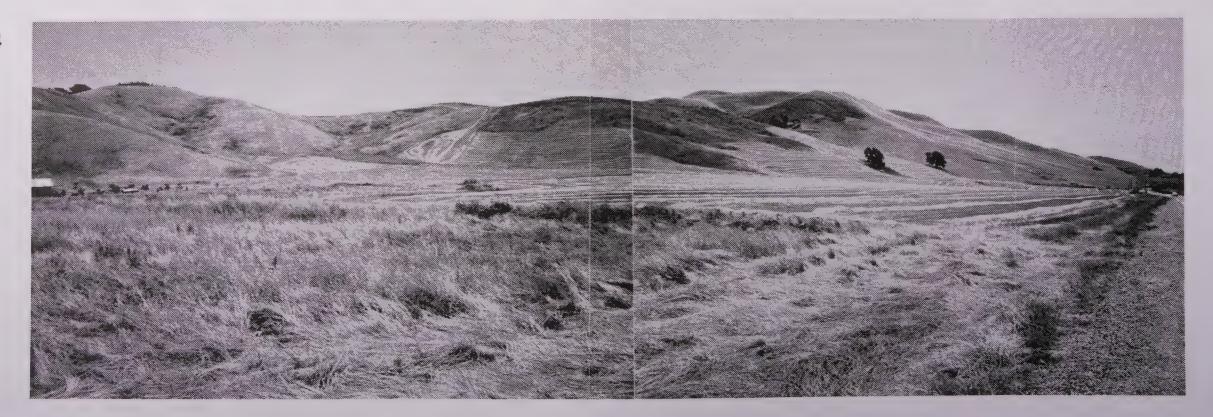


Figure 4.8-3 (Photos 3 and 4) Views from Camino Tassajara of parallel and perpendicular valleys



Highland Roads along significant portions of their lengths. This is evident in the area of Finley Road, Johnston Road and along Tassajara, south of Highland. Figure 4.8-4 (Photos 5a and 5b) illustrates how the hills meet the roadway throughout the valley. Photo 5b depicts a significant hill where Camino Tassajara turns south at Finley Road. This particular hill and the riparian corridor on the east side of Camino Tassajara provides a physical entry into the valley. Several knolls, ridges and other topographic features are prominent. Figure 4.8-2 also illustrates how the riparian corridors stand out prominently from the horizontal valley forms and from the light green and golden color of the hills which occurs throughout most of the year.

The project site is pastoral in character with ranch style structures interspersed on the landscape as shown in Figures 4.8-3, 4.8-5 and 4.8-6. The predominate land use is grazing, dry land farming (grain), equestrian facilities, and orchard. Numerous structures and corrals associated with ranching activities are visible to motorists traveling on Camino Tassajara. New development on five-acre parcels has occurred in the Bruce Drive neighborhood. Mostly large, country homes with equestrian facilities occupy these parcels. The San Ramon Valley Fire District maintains a fire station in the project area, south of Finley Road. North of the project area suburban development has occurred along the north side of Camino Tassajara. Subdivisions such as Shadow Creek and Blackhawk are located here.

Vegetation is primarily grassland and grain crops as shown on Figure 4.8-3. Two large oak woodlands occupy the north- and west-facing slopes on the east side of Camino Tassajara, south of Highland Road. A more dense oak woodland is found on the north-facing slopes in the northwest portion of the project site (Figure 4.8-6, Photo 7). Photo 8 depicts the oak woodland on the east side of the project site. Individual oak trees are scattered throughout the planning area as shown in Figure 4.8-7.

The County General Plan designate Camino Tassajara as a scenic roadway. It is understandable given that the roadway twists, turns, rises and falls, changing vistas and focusing the eye first on one side and then the other side of the valley. It is also scenic because the road is very narrow at some points where it passes through areas with dense planting at creeks very close to the road on one side and hills immediately adjacent to the road on the other side. A good example of this is at the intersection of Finley Road and Camino Tassajara.

Existing building forms are generally low and horizontal in character. Often they are located in small clusters which have an informal appearance with roof ridges running in different directions. Aboveground utility lines run continuously along Camino Tassajara (Figure 4.8-4).

Visual intrusions that detract from the rural setting include the overhead utility lines extending along the side of the road and the subdivisions which are developing in the area immediately north of the planning area (Blackhawk, Shadow Creek, Bettencourt Ranch). Urban characteristics of the subdivisions as shown in Figure 4.8-8 (Photo 11), include homes with matching roof forms, heights and similar colors lined up in a row behind sound walls in close proximity to the road. The houses are elevated above the roadway, and coupled with their height, essentially block views to the hills in the mid and far distance. Figure 4.8-8 (Photo 10) shows the landscaped roadway right-of-way and median, a contrast to the brown grasslands of the natural environment. Sidewalks occur adjacent to the curbs in some places, increasing the apparent width of the street.

Visibility

With the exception of the major interior east/west-trending valley, most of the TVPOA planning area is visible to motorists traveling on Camino Tassajara. The site is characterized by long and sweeping views, whether traveling along the roadway or viewing the site from the top of the hills and knolls as illustrated in Figure 4.8-9 (Photos 12-14). A strong sense of visual unity is created by similar hill forms, colors and a general absence of man-made structures.

Entering the project area from the west, motorists/bicyclists view a large expanse of flat vacant land that is dry farmed along the west side of the roadway. This is illustrated in Figure 4.8-9, Photo 13. Equestrian facilities border this property and residential development is located across Camino Tassajara to the north. Continuing east and south on Camino Tassajara, the alluvium valley formed by the west branch of Alamo Creek and the gently rolling hills surrounding this plain are visible to motorists. In places further east and south along Camino Tassajara the spur ridges extend down to the roadway, blocking views of the upper hillsides.

Two prominent oak woodlands located on the east side of Camino Tassajara and south of Highland Road are visible to motorists of both roadways. The northern most woodland is the more visible and appears on the north and west-facing slopes that extend to the roadway. Figure 4.8-6, Photo 8, illustrates this feature. The second woodland located further south, sits back from the roadway and only a small portion of the woodland is visible from the roadway. This second oak woodland wraps around the nose of the hill to the east and disappears from view. The oak woodland in the northwest portion of the site (Figure 4.8-6, Photo 7) is visible to residents of Lawrence Road.

Tassajara Creek provides a strong visual contrast to the hill forms. The creek is visible to motorists from where it enters the planning area on Finley Road, but is not visible again until it crosses under Highland Road. South of Highland Road the creek cuts along the toe of the slopes, forming flat open valleys between the roadway and the creek.

Views of the project site are visible for many miles. On the open space lands above Blackhawk, portions of the project area can be seen, and from the Shadow Creek development, the project area is much more prominent within the view corridor. Figures 4.8-10, 4.8-8 (Photo 11) and 4.8-9 (Photo 14), respectively, depict close, middle and distant views of the project area. A distant view of portions of the project site can also be seen from Mt. Diablo and various hiking trails. However, development of the site at that distance would blend into the horizon and would not be distinguishable from similar development in the upper Tassajara Valley.

Relevant Contra Costa County General Plan Goals and Policies

The following goals and policies to conserve the scenic beauty of the County are applicable to the Tassajara project:

Photo 5a



Photo 5b

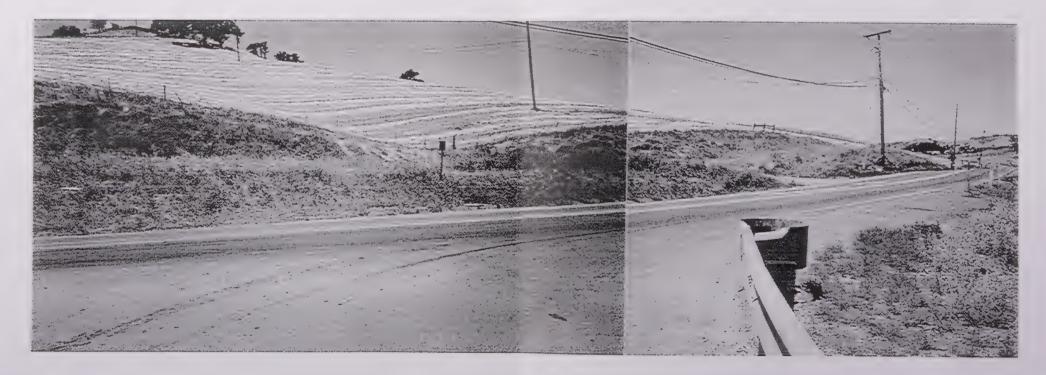


Figure 4.8-4 (Photos 5a and 5b)

Toe of Slopes Meeting Roadway along Camino Tassajara. NOTE: Photo 5b is view from Camino Tassajara/Finley Road intersection.





Former country schoolhouse located on Finley Road.

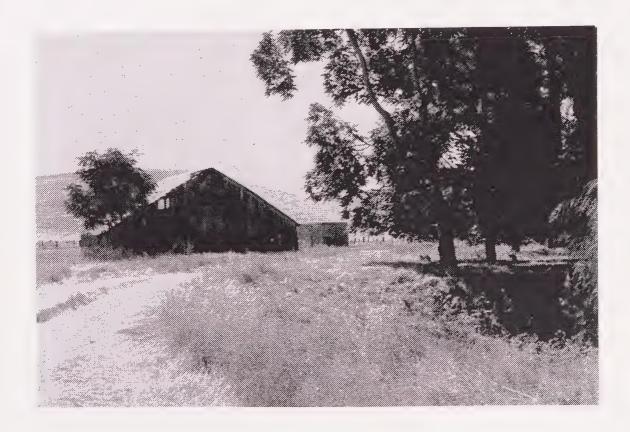


Figure 4.8-5 Rustic Structures Found in Tassajara Valley



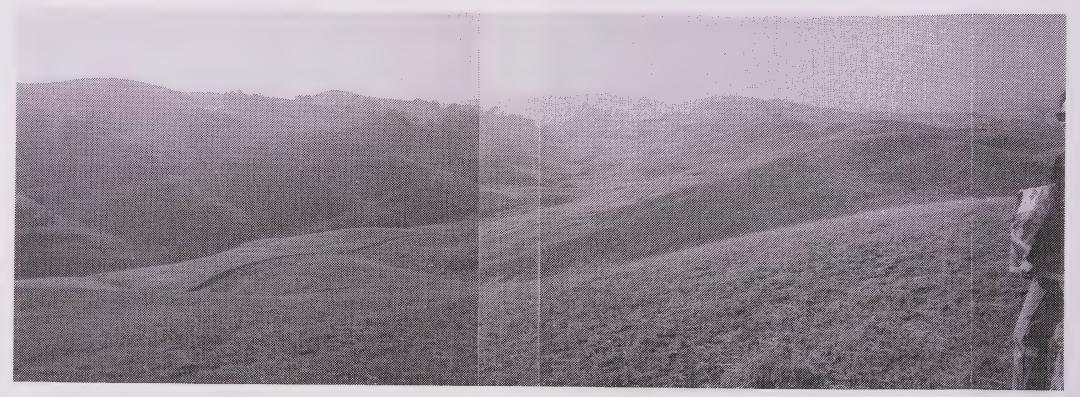


Photo 8

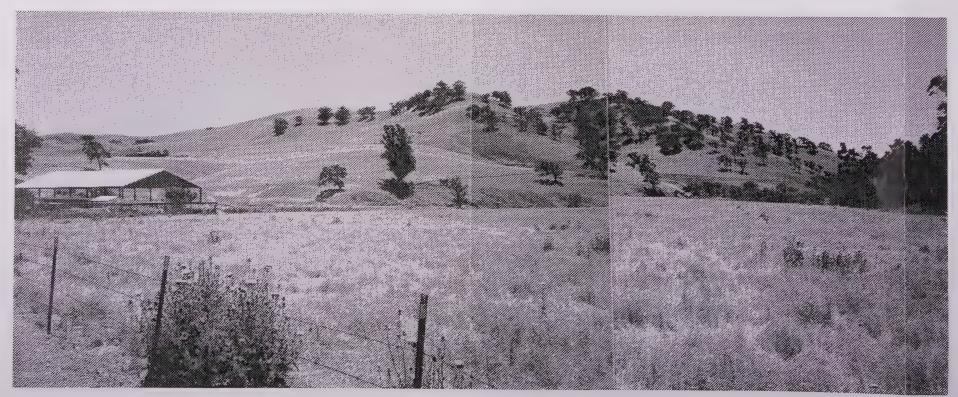


Figure 4.8-6 (Photos 7 and 8) Views of Oak woodland tucked in narrow valley in northwest portion of site and woodl north- and west-facing slopes near Camino Tassajara and Highland Road





Figure 4.8-7 (Photo 9) An example of scattered valley oaks behind existing fire station on Camino Tassajara

Photo 10



Photo 10



Photo 11



Figure 4.8-8 (Photos 10, 11) View of Shadow Creek Subdivision with project site in background and landscaped roadway.

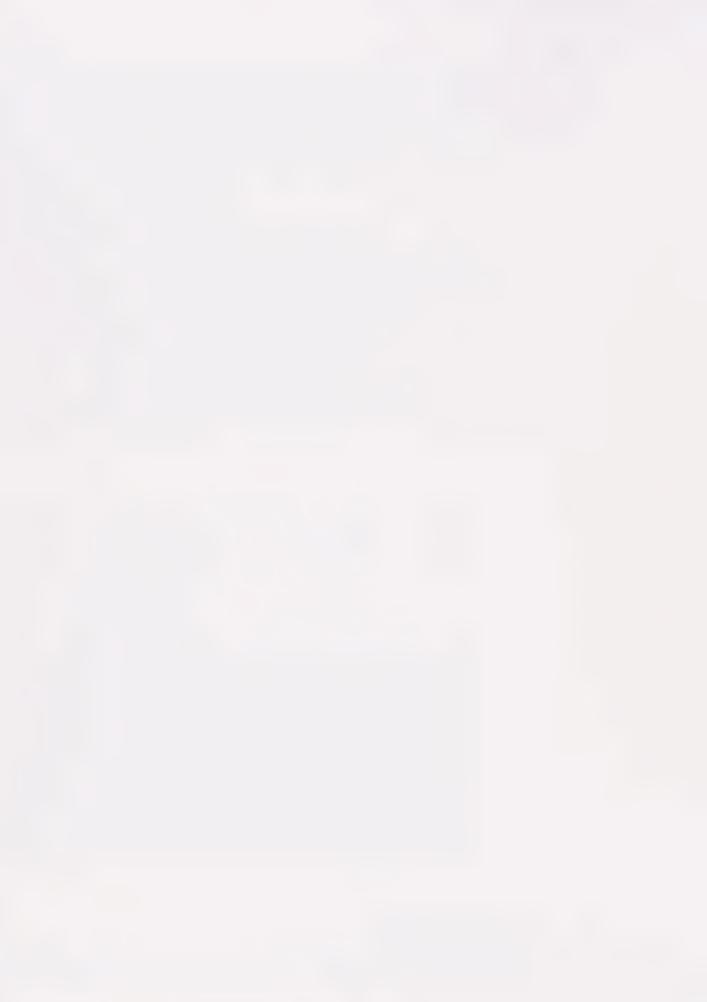


Photo 12



Photo 13



Photo 14



Figure 4.8-9 (Photos 12, 13, 14) View overlooking northern portion of site from hilltop east of Camino Tassajara

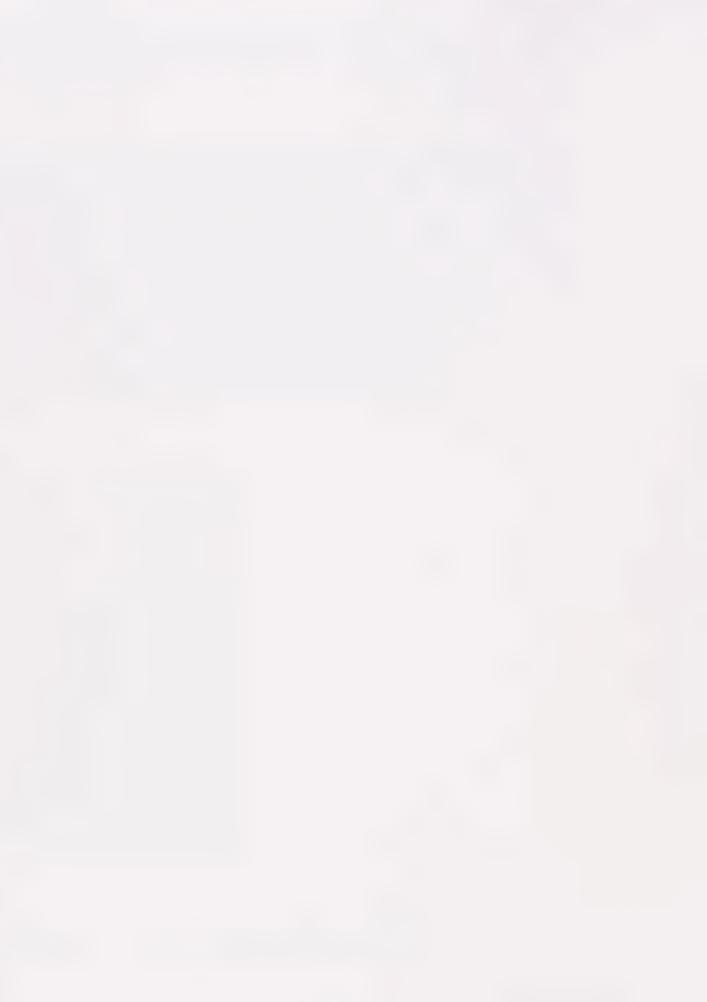
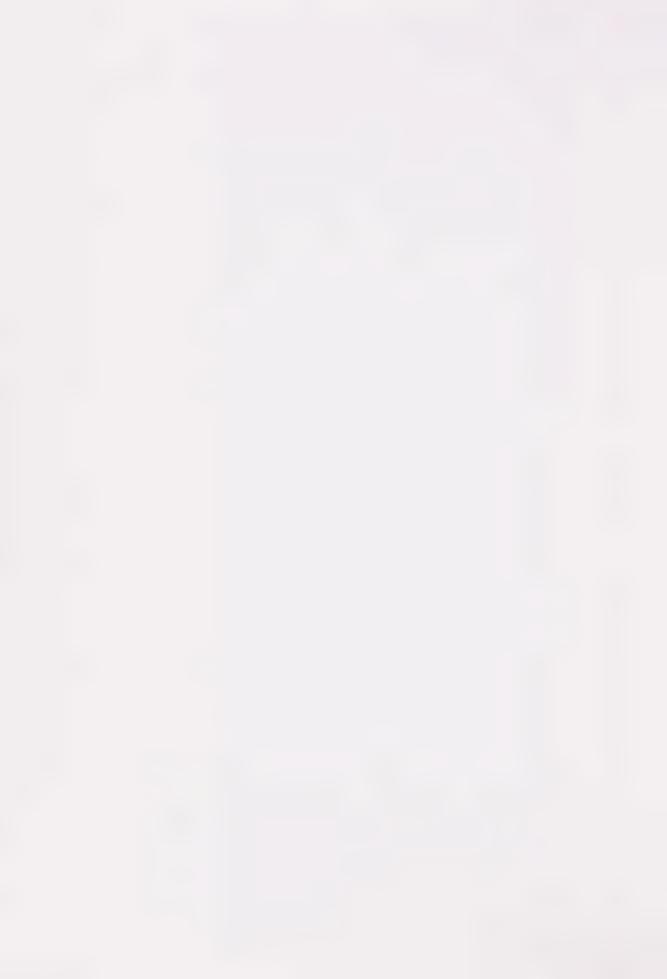




Figure 4.8-10 (Photo 15) Viewing south into project area at entry to Shadow Creek subdivision



Scenic Resources Goal

9-E To protect major scenic ridges to the extent practical from structures, roadways, or other activities which could harm their scenic qualities.

Scenic Resources Policies

- 9-11 High quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damages, and damages to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes of 26 percent or more shall be protected and are generally not desirable for conventional cut-and-fill pad development. Development on open hillsides and significant ridgelines shall be restricted
- 9-12 In order to conserve the scenic beauty of the County, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damages to significant trees and other visual landmarks
- 9-14 Extreme topographic modification such as filling in canyons or removing hilltops shall be avoided. Clustering and planned unit development approaches to development shall be encouraged. . . .
- 9-18 The construction of new structures on the top of major scenic ridges or within 50 feet of the ridgeline shall be discouraged.
- 9-19 When development is permitted to occur on hillsides, structures shall be located in a manner which is sensitive to available natural resources and constraints.
- 9-20 Hilltops, ridges, rock outcroppings, mature stands of trees and other natural features shall be considered for preservation, at the time that any development applications are reviewed.
- 9-21 Any new development shall be encouraged to generally conform with natural contours to avoid excessive grading.
- 9-22 All new land uses which are to be located below a major ridge shall be reviewed with an emphasis on protecting the visual qualities of the ridge.
- 9-24 The appearance of the County shall be improved by eliminating negative features such as non-conforming signs and overhead utility lines, and by encouraging aesthetically designed facilities with adequate setbacks and landscaping.

Scenic Routes Goal

5-R To identify, preserve and enhance scenic routes in the County.

Scenic Routes Policies

- 5-34 Scenic corridors shall be maintained with the intent of protecting attractive natural qualities adjacent to various roads throughout the County.
- 5-36 Scenic views observable from scenic routes shall be conserved enhanced, and protected to the extent possible.
- 5-38 Multiple recreation use, including trails, observation points and picnicking spots, where appropriate, shall be encouraged along scenic routes.
- 5-42 Provide special protection for natural topographic features, aesthetic views, vistas, hills and prominent ridgelines at "gateway" sections of scenic routes. Such "gateways" are located at unique transition points in topographic or land use, and serve as entrances to regions of the County.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Significance Criteria

Impacts and mitigation measures related to visual and aesthetic effects focus on the impacts for both on-site and off-site viewers. CEQA Guidelines Appendix G (1986 revised) indicate that a project will normally have a significant adverse effect on the environment if it has a substantial, demonstrable negative aesthetic effect.

This determination is based upon several criteria, including observer position, view corridors, existing and proposed screening, backdrop, and characteristics of the proposed development. The existing visual character of the surrounding area is also taken into account in applying this definition. This analysis also considers the *County General Plan* goals and policies to preserve the scenic beauty of the County as a basis for evaluating visual impacts. There is no quantitative method for assessing visual quality and aesthetic impacts; thus judgement of the significance of a particular effect may be expected to differ among viewers. For this analysis the following criteria are used to determine whether a significant visual impact occurs. Does development of the Tassajara planning area:

• substantially and negatively affect visual character in areas of moderate to high visual sensitivity through the introduction of incompatible elements as they relate to scale, form, line, color, or texture;

- substantially and negatively alter existing visual character of an area or viewshed from rural, pastoral, or natural to urban, commercial or other more dense land use pattern;
- substantially and negatively alter existing natural landforms to engineered slopes, e.g., graded terraces and cut slopes;
- substantially and negatively alter existing vegetation patterns, such as individual large oak trees, the oak woodland or riparian vegetation;
- substantially and negatively alter riparian corridors by culverting or covering over;
- substantially and negatively block or screen views caused by the introduction of new development;
- conflict with adopted goals and policies of the County General Plan; or
- substantially alter areas of moderate to high visual sensitivity including: scenic corridors as designated in the *General Plan*; views from existing and proposed trails and bikeways of regional importance; areas at or near ridgelines or high on hillsides visible from existing and proposed roads, residences or recreation areas; stream corridors and natural features?

Future development of the Tassajara planning area will be subject to design guidelines to ensure that the project will build out as envisioned.

All impacts are considered significant adverse impacts unless identified otherwise. The corresponding mitigation measure(s), unless otherwise noted, would be sufficient to reduce impacts to a less-than-significant level. Although not required by CEQA, some less-than-significant impacts have been discussed because they are issues of local concern. While no mitigation measures are required by CEQA for less-than-significant impacts, in some cases recommendations are proposed that could be considered by staff as conditions of project approval.

Methodology

In general, the first step in preparing a visual impact analysis is to determine the locations from which the project site is visible and to analyze the impact the proposed development would have on views. To determine if the visual impact is significant or insignificant, a number of factors must be considered which include:

- Percentage of viewshed. The portion of the total area that can be seen which is comprised by the site. Is the site part of a larger distant view or does it fill the whole view area?
- Duration of view. The amount of time attention is focused on a particular view: Is the site in view for a significant period of time?

- Frequency of viewers. The number of people who will view the site in a given period of time. Will a significant number of people see the site from this location?
- Angle of view. Location of site within total view area. Is it directly in the line of sight or is it a peripheral part of the view?

Key viewpoints were selected for simulating views of future development after construction. These viewpoints were selected in concert with the EIR consultant, County staff and the TVPOA site planner. Each location is a representation of the project's various development patterns.

For each of the five selected views, photographs of the planning area were made and computer-generated photorealistic visual simulations were prepared to illustrate how the view is expected to appear after project completion. The simulations were derived from information contained in the TVPOA preliminary development plan, grading plan and design guidelines. The photographs of existing conditions and the computer simulations are found in Figures 4.8-11 through 4.8-21 and may be used in combination to evaluate some of the visual impacts. The photo location for each of these simulations is shown on Figure 4.8-1. A description of the photo simulation methodology is provided in Appendix F.

In addition to the views and impacts identified through the visual simulations described above, an analysis was prepared regarding potential visual impacts one might experience in moving through the project site upon its completion.

Visual Quality Overview

In general, the project layout has been prepared with sensitivity to land forms, natural features of the site and the visual mitigation of mass grading. However, in seeking to minimize development on some of the more prominent hilltops and hillsides, the plan proposes extensive grading to flatten other land forms and correct soils stability problems over significant portions of the site. Several hilltops are proposed for cuts of 50 to 100 feet, and most valleys leading up from the main valley floor between hill forms are proposed for fill to permit residential development.

Camino Tassajara has been well aligned to open up views of Tassajara Creek and adjacent open spaces along portions of its length. However, in the more developed areas of the site, the planned road right-of-way is significantly narrower than generally found along the roadway between the site and Sycamore Valley Road to the west.

The Country Loop Road, which runs parallel to Camino Tassajara, is very suburban in character, and has the potential for solid sound walls located within 15 feet of its edges along a significant portion of its length. An on-street Class II bike lane, rather than a Class I bike lane separated from the street and integrated with street-side landscaping, further reinforces the road's more urban character.



Figure 4.8-11 (Plate A) Viewing southeast overlooking the Village Center site





Figure 4.8-12 (Plate B) Photo simulation depicting Village Center concept

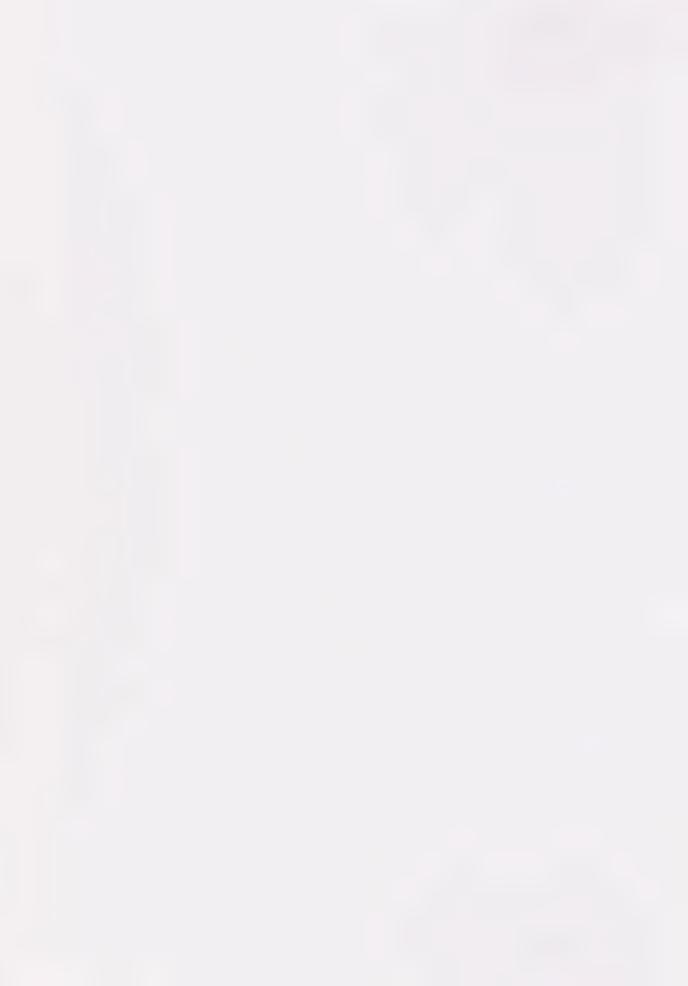




Figure 4.8-13 (Plate C) Viewing southeast from Highland Road of an area designated for single-family medium-density housing

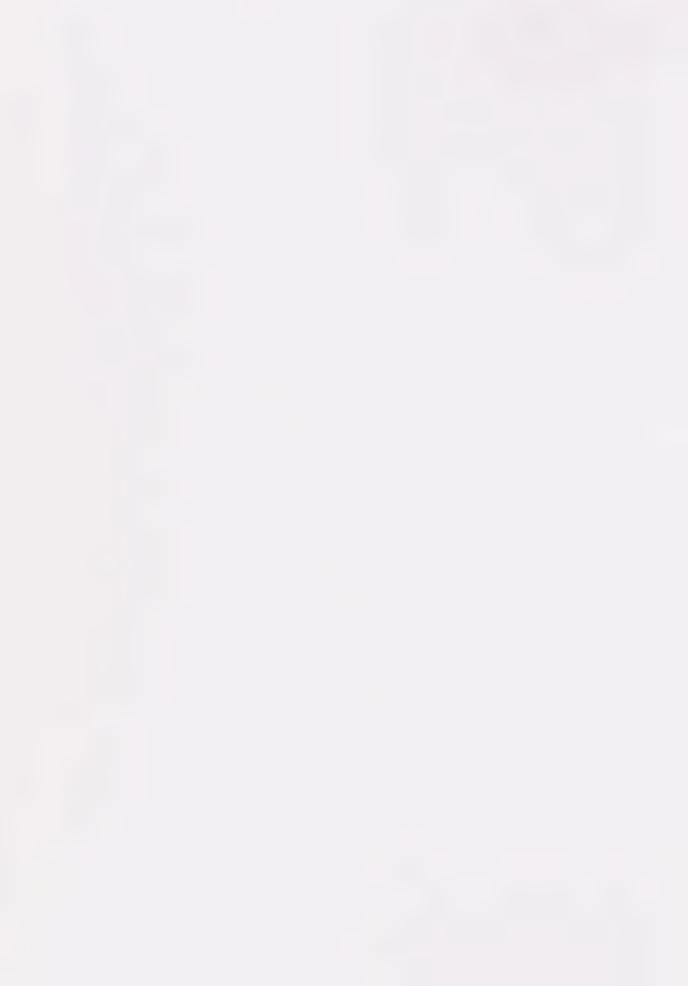




Figure 4.8-14 (Plate D) Photo simulation depicting single-family medium-density housing

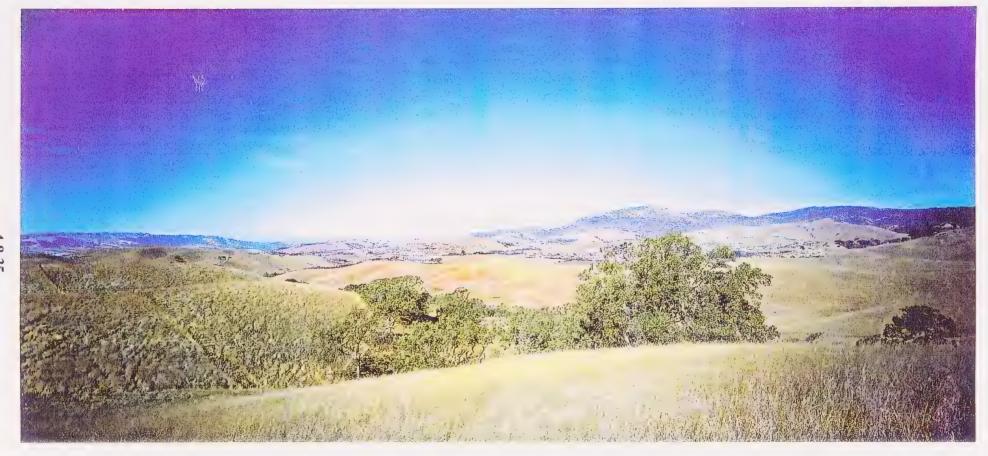


Figure 4.8-15 (Plate E) Viewing north/northeast overlooking golf course site. Existing development in distant view.



Figure 4.8-16 (Plate F) Photo simulation of golf course and single-family residential development





Figure 4.8-17 (Plate G) View from Camino Tassajara of designated community park site

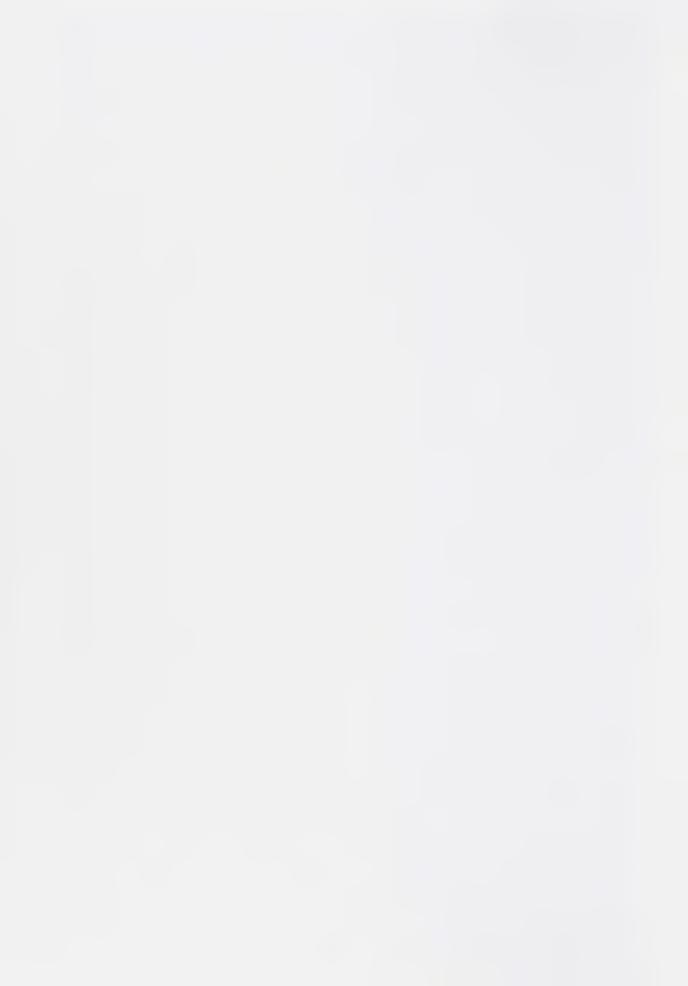




Figure 4.8-18 (Plate H) Photo simulation of community park with residential development in background





Figure 4.8-19 (Plate I) Viewing west from hills overlooking Camino Tassajara to site of Dougherty Valley Road connection (Windemere Parkway)

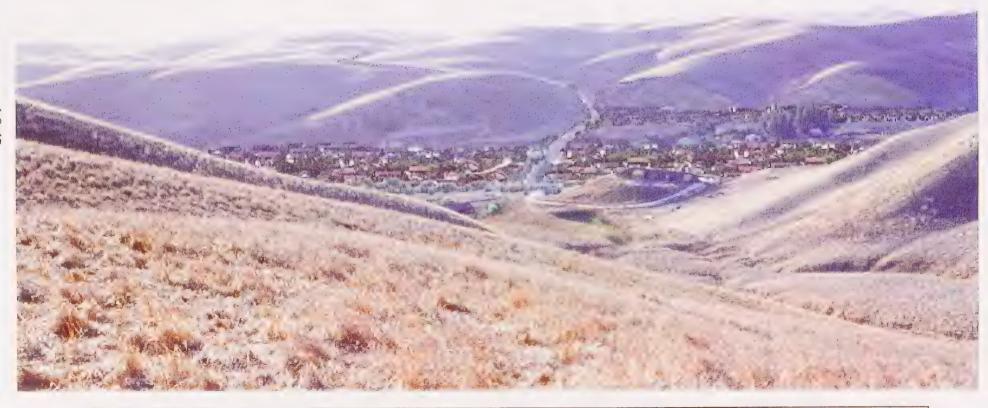


Figure 4.8-20 (Plate J) Telescopic photo simulation depicting Windemere Parkway and single-family residential development



Figure 4.8-21 (Plate K) Standard photo simulation of Windemere Parkway and residential development

The layout of secondary roads parallel to and separated by approximately 100 feet from both Camino Tassajara and the Country Loop Road will affect the visual quality of those streets by establishing continuous and unbroken rows of homes adjacent to them.

Village Centers, identified as Mixed Use (MU) areas, are well described in the PUD Plan and the Tassajara Design Guidelines. However, conflicts between on-street parking and traffic circulation, a reliance on shops with entries on two sides (i.e., street-side and parking lot-side) along with potential developer resistance to non-typical site layouts for commercial centers, especially those including supermarkets, may result in Village Centers with a different visual character than suggested by the more detailed plans and sketches which have been utilized to illustrate the intent of these centers. The scale and character of the areas, as proposed, would be visually attractive and supportive of their roles as "Village Centers." The proposed Preliminary Development Plan layout for the mixed-use areas, however, is unique and not consistent with other commercial centers along Camino Tassajara which focus most of their activity toward concentrated parking areas oriented to Camino Tassajara.

And finally, the Tassajara Design Guidelines are comprehensive and well crafted to achieve a high quality project. However, some guidelines may be in conflict with County policies and ordinances and others may need augmentation in order to assure the size and character proposed.

IMPACT ANALYSIS

Impact 4.8-1 Development of the Tassajara Valley planning area would alter the rural character presently viewed from area roadways, existing neighborhoods, proposed EBRPD trail and Mt. Diablo State Park parks. This is a significant unavoidable impact.

Views of the project site from the roadway and nearby existing residential subdivisions would be substantially changed from what is currently seen. The applicant's plan calls for a development that will be in keeping with the valley character, maintaining open space and restricting development to the lower portions of the hillside. However, to achieve the objectives of the applicant's plan, extensive site alteration will be required. Valleys will be filled and hilltops cut to provide for flatter, more easily developed sites. Views will be of a suburban development located in close proximity to Camino Tassajara and the Country Loop Road. The openness that is now experienced when driving through the valley will be lost except in the areas where open space adjoins the roadway.

Off-site residents would no longer have views of open, rolling terrain spotted with large oak trees and intermittent stream corridors. An example of site alteration is located directly across from the Shadow Creek subdivision. As illustrated in Figure 4.8-10, the hill which presently extends to the roadway would be lowered to accommodate Multi-Family Residential Medium Density, and yielding approximately 14 dwelling units per net acre. Other areas of development are depicted in the before and after photo simulation images found in Figures 4.8-11 through 4.8-21. These montages illustrate future development from representative viewpoints on Camino Tassajara and from within the site.

Views of the project site at the western entry would be changed substantially from open space and hills close to Camino Tassajara to a suburban character featuring commercial development and multi-family, low density housing. Motorists would experience a built-up suburban environment on both sides of the roadway extending from the western entry for approximately one mile. Hikers along the proposed EBMUD trail along the western edge of the project would be looking down upon a substantially altered landscape.

Views from state and regional parklands to the east would not be significantly altered. These views would be at such a distance that the proposed development would blend into the existing visual framework.

Altering the visual character of the site from rural to suburban cannot be mitigated to a less-than-significant impact as it is impossible to avoid this loss. However, the provision of adequate road rights-of-way, the utilization of special agrarian-related landscaping and design details (e.g., open rail fencing), the minimization of development along portions of roadways with substantial amounts of adjacent open space, and the implementation of the applicant's proposed Design Guidelines would soften the appearance of the development and provide a transition between new suburban development and the more rural, open space areas at the edge of the County.

Mitigation Measures

The following mitigation measures would help to reduce the visual impact, but not to a less-thansignificant level.

- 4.8-1(a) Each application should be reviewed in the context of the Tassajara Design Guidelines to ensure that individual projects meet the intent of the overall vision described in the TVPOA application.
- 4.8-1(b) Roads, project entries, fencing, signage and other elements related to public roadways should conform to the Tassajara Design Guidelines.

Impact 4.8-2 Approximately 43 percent of the visually prominent open space would be developed if the project is implemented.

Implementation of the preliminary development plan as proposed would reduce existing open space visible from Camino Tassajara and neighboring roadways in East Dublin or Mt. Diablo, adjoining residential neighborhoods and existing or proposed trails, by approximately 43 percent. The preceding before and after photographs depicting views from key viewpoints provide a sample image of the extent of development that would occur in the valley, fragmenting and obscuring views of open space.

Percentage of existing visible open space less 13 percent (575 acres) currently built upon.

Structures would be the primary elements which would eliminate or obscure views, although site modification and installation of infrastructure facilities (e.g., water storage tanks, pumping plants, service roads) could also detract from the visual quality of the open space. The *Tassajara Design Guidelines* provide design criteria to be used as the development builds out. These guidelines provide a method in which the Tassajara project vision can be implemented.

Mitigation Measures

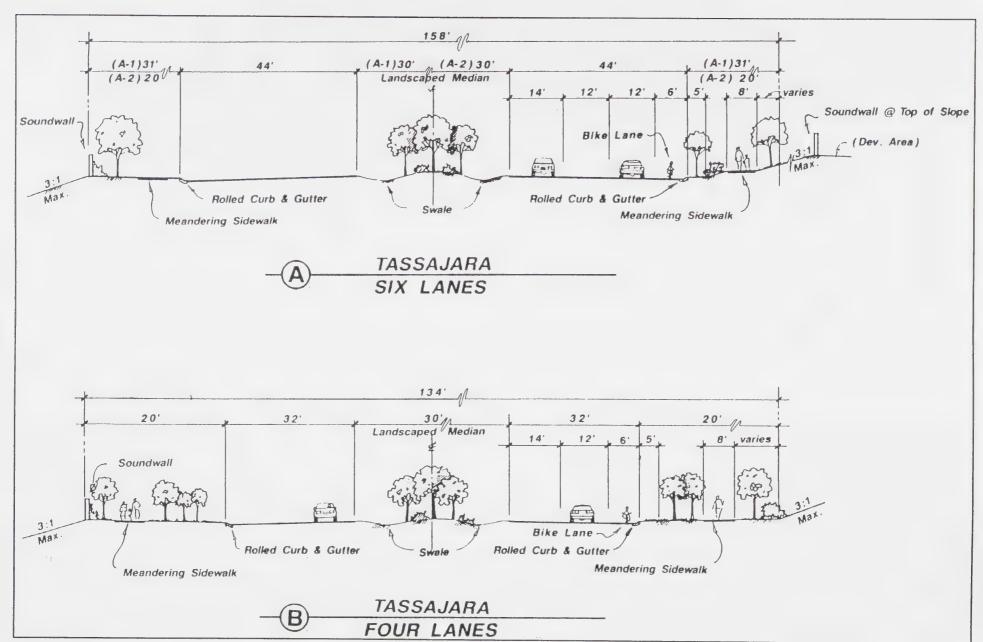
All of the following mitigation measures are required to reduce this visual impact to a less-thansignificant level.

- 4.8-2(a) The Conditions of Approval for the project's Preliminary Development Plan should incorporate language requiring subsequent development proposals to conform to the Tassajara Design Guidelines in order to ensure that new development is sensitively designed with respect to the site and adjacent construction.
- 4.8-2(b) Mitigation measures recommended in the Geology/Seismicity/Soils and Biological Resources sections should be applied relative to cut of slopes and ridges, fill, wildlife corridors, habitat preservation and creek bank setbacks.
- 4.8-2(c) Public open space areas should be dedicated to a public agency or conservation organization to be conserved and managed in perpetuity.

Impact 4.8-3 The development would substantially alter the character of Camino Tassajara as a scenic route.

Camino Tassajara would be widened from its current 2-lane width to 4-lanes where it would be paralleled by the new Country Loop Road (2-lanes), and to 6-lanes at the northern and southern ends of the development. As illustrated in the applicant's cross-section in Figure 4.8-22, a 30-foot-wide landscaped median with swale edges and rolled curbs and gutters at the road's outer edges is proposed to soften the appearance of the roadway. Some realignment to smooth curves is proposed, and a significant realignment is made at the southern end of the roadway to place it adjacent to the open space along Tassajara Creek. In all, Camino Tassajara is bordered on at least one side by either open space or park space over slightly one-half of its length, and bordered on both sides by open space and parks for approximately 10 percent of its length.

However, the proposed right-of-way for Camino Tassajara includes only a 20-foot setback between the roadway and the right-of-way line on each side. A portion of this length, as shown in Figure 4.8-23, is bordered by residential development which may have solid sound walls located at the property line. This restricted right-of-way is in sharp contrast to the majority of the roadway's length between the project site and Sycamore Valley Road to the west. While some instances of 20-foot setbacks do exist along Camino Tassajara, the vast majority of the area is characterized by setbacks of 50 feet, with some setback areas of 100 feet or more.



Source: dk Associates

Figure 4.8-22 Street Cross-Section

Figure 4.8-23 Residential Uses adjacent to Camino Tassajara

Another condition which would affect the scenic quality of Camino Tassajara will occur along the east side of the roadway south of Highland Road in the form of a small (8.2 acres) flat area of land (Figure 4.8-24 Site A) proposed for multi-family housing (ML at 7.3 to 11.9 units per acre). This development would be an intrusion of higher density housing within an otherwise open space/parkland setting located between Camino Tassajara and the arched path of Tassajara Creek to the east.

Similarly, a pocket (12.9 acres) of medium density single-family housing (SM at 3.0 to 4.9 units per acre) is proposed at the very southern end of the roadway at the Contra Costa County/Alameda County boundary (Figure 4.8-24 Site B). As in the case above, this is an intrusion into an otherwise long stretch of open space along the edge of Camino Tassajara. In addition, this proposed development, along with the more substantial amount of SM development on the east side of Camino Tassajara in this area, may be in conflict with *General Plan Policy* 5-42 relating to significant "gateways."

Yet another impact affecting the scenic quality of Camino Tassajara would be the extension of Johnston Road across Camino Tassajara (Figure 4.8-25 Site A). The existing hill at this location is approximately 75 feet in height and very close to Camino Tassajara. It would be graded substantially to allow the Johnston Road extension. In a similar manner, the existing hills which currently border Camino Tassajara between Blackhawk Drive and Johnston Road, shown on Figure 4.8-25 Site B, would be substantially graded to pull the hills back away from the road to provide sites adjacent to the road for the northernmost Village Center and multi-family housing. Much of this area contains existing slopes of 26 percent or more. While much of the hill at the road turn (i.e., across from Finley Road) would remain, the scenic quality of Camino Tassajara with natural hillsides coming down close to the roadway edge would be substantially altered.

Mitigation Measures

All of the following mitigation measures are required to reduce the scenic impact of altering a scenic route to a less-than-significant level.

- 4.8-3(a) A minimum setback of 50 feet should be required between Camino Tassajara curbs and the road right-of-way edge. Landscaping and open fencing at open space and park areas should be allowed to encroach up to 30 feet into this setback to encourage the creation of edge variety.
- 4.8-3(b) The development intensity of the multi-family residential parcel (ML) located east of Camino Tassajara should be reduced to Single-Family Very Low (SV) to be consistent with other development located between Camino Tassajara and Tassajara Creek on the east side of Camino Tassajara. (Refer to Figure 4.8-24 Site A.)
- 4.8-3(c) Camino Tassajara sound walls at or near the 50-foot setback line should be limited to a maximum length of 400 feet in a single stretch and should be staggered to avoid the straight linear plane.

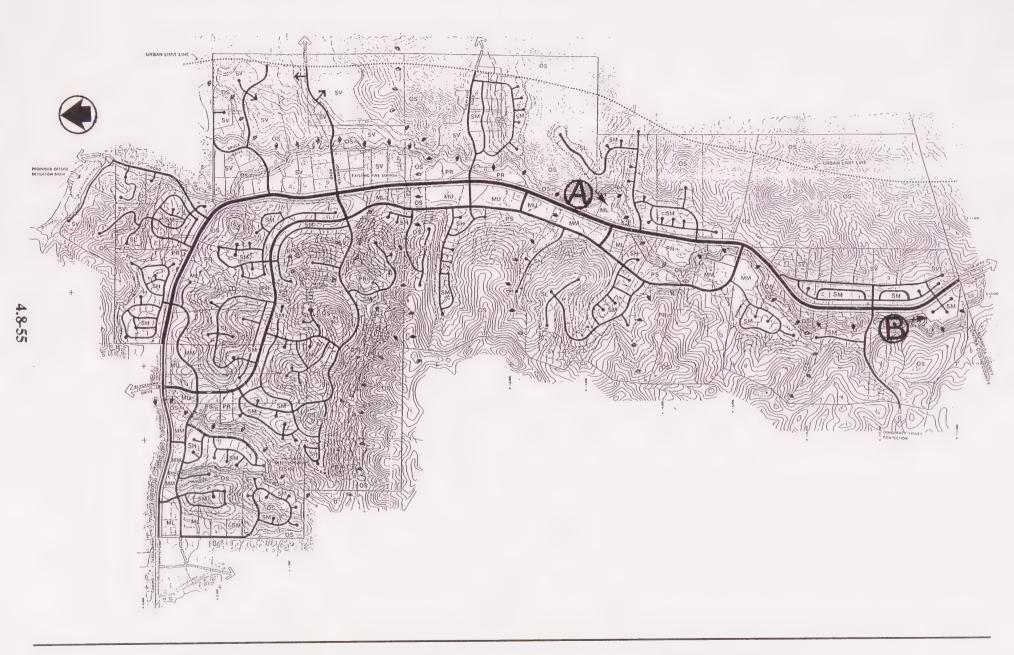


Figure 4.8-24 Potentially Incompatible Land Uses Refer to Mitigation Measures 4.8-3(b) and (e)

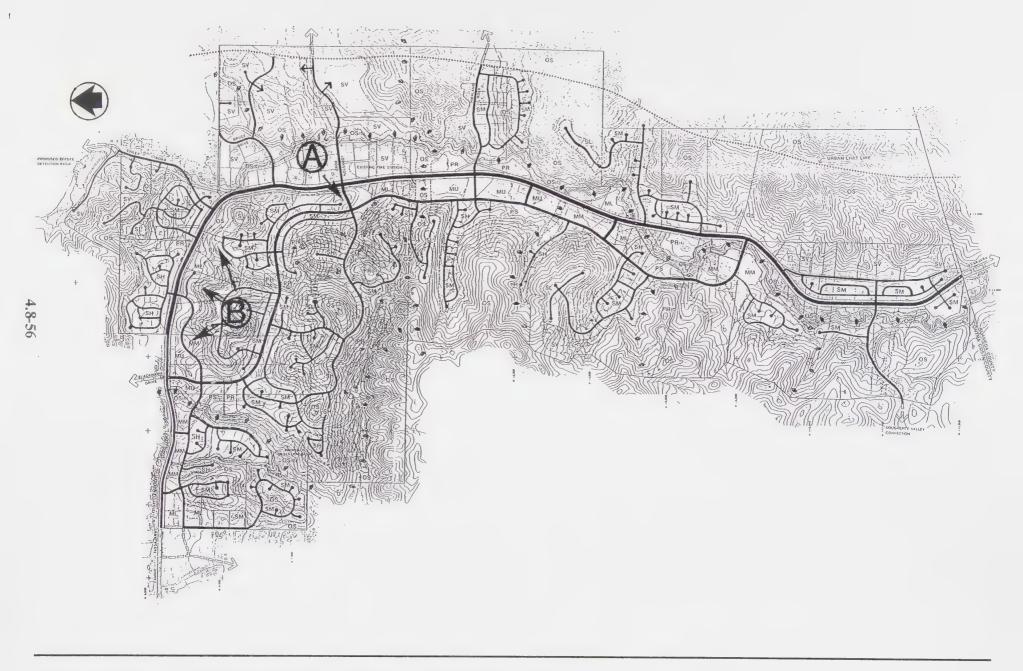


Figure 4.8-25 Hill Cuts adjacent to Camino Tassajara Refer to Mitigation Measures 4.8-3(f) and (g)

- 4.8-3(d) The use of sound walls adjacent to roadways should be minimized as much as possible through the use of earth berms and site planning. Where required, sound walls should be substantially landscaped to soften their appearance.
- 4.8-3(e) Require a minimum 150-foot-wide landscaped open space area along the west side of Camino Tassajara at the project's southern boundary to create an entry to the County. (Refer to Figure 4.8-24 Site B.)
- 4.8-3(f) Relocate the roadway segment which currently is proposed as an extension of Johnston Road and preserve the existing hill at the western terminus of Johnston Road. (Refer to Figure 4.8-25 Site A.)
- 4.8-3(g) Maintain a substantial portion of the land along the south side of Camino Tassajara in its natural land form between Blackhawk Drive and Finley Road. Limit development next to the road to an area immediately adjacent to the Blackhawk Drive intersection. (Refer to Figure 4.8-25 Site B.)

Impact 4.8-4 The proposed grading would substantially alter the site's topography.

The applicant is proposing considerable cut and fill throughout the site as identified on Figure 4.8-26. Cuts from the tops of hills are proposed which range up to 100 feet, with 40- to 50-foot cuts not unusual. Substantial grading and fill would also be required to accommodate the roadway system. The extension of Johnston Road west of Camino Tassajara is an example of where extensive grading into a major hill would be required.

Significant valleys running between hills from the main valley floor are proposed to be covered with fill up to 40 and 50 feet deep to create flat developable areas. This is most apparent in Areas C, E, B and A, as shown in Figure 4.8-26. The toes of all of the hills extending down toward Camino Tassajara would be cut off to accommodate the Country Loop Road. For additional information regarding grading impacts, refer to Section 4.2, Geology/Seismicity/Soils.

General Plan Policy 10-24 and Measure C do not prohibit grading necessary for safe development, but that grading activities be "sensitive to geologic, visual and vegetative factors by minimizing the impact." While grading and development according to the proposed Tassajara Design Guidelines would mitigate visual impacts to a degree, the approach of mass grading to produce flat, contiguous sites for housing on hilltops and in valleys would substantially alter existing land forms and have a significant visual impact, especially on hilltops that are viewed from above (e.g., from the proposed EBRPD trail along the western edge of the project) and on valleys viewed from Camino Tassajara.

Mitigation Measures

All of the following mitigation measures are required to reduce the impact of grading to a less-thansignificant level.

Figure 4.8-26 Significant Site Grading Areas

- 4.8-4(a) Grading and development should be prohibited on prominent hilltops as identified in Figure 4.8-26, other than that which is already constructed.
- 4.8-4(b) Refer to mitigation measure 4.8-3(f).
- 4.8-4(c) Refer to mitigation measure 4.8-3(g).
- 4.8-4(d) Future development plans must be consistent with the Tassajara Design Guidelines.

Impact 4.8-5 Development along the Country Loop Road limits views to the natural open space and parks.

The Country Loop Road, as proposed, would consist of one travel lane and one on-street bike lane in each direction separated by a 16-foot-wide swale median. Setbacks to property lines on each side are limited to 15 feet. The roadway is bordered along much of its length with residential development (Figure 4.8-27) which will likely require sound walls constructed at the property line. Close to 40 percent of the length of the road could be constrained by soundwalls located on both sides, mostly to the north of Johnston Road where only one small 400-foot break in continuous development occurs along a 1.2-mile stretch of road. Motorists traveling 30 to 40 mph along Country Loop Road could see the golf course for 10 to 13 seconds in the 400-foot view window if they turn perpendicular to the roadway while passing the break in development.

The narrow 15-foot setback proposed along the Country Loop Road also limits the proposed bike path to a Class II status (on-road). This could make the bike path which connects development west of Camino Tassajara to the two Village Centers and major park spaces less safe than would be the case with a Class I path separated from vehicular traffic. The bike path's integration with the vehicular roadway may also discourage its use as an alternative to automobile travel for trips within the valley area. As noted on pages 50 and 51 of the Tassajara Design Guidelines, Class I Bikeways are well suited to "children and casual riders" while Class II Bikeways are more appropriate for "the serious recreational riders."

Mitigation Measures

The following mitigation measures are required to reduce the impact of limited views to open space and parks to a less-than-significant level.

- 4.8-5(a) Increase the Country Loop Road right-of-way to a minimum of 30 feet on each side of the roadway, and provide a Class I Bikeway along its length.
- 4.8-5(b) Provide additional open space and park breaks in the development along each side of the roadway between the Camino Tassajara/Blackhawk Drive intersection and the major open space corridor located between Johnston Road and Highland Road (Figure 4.8-27).

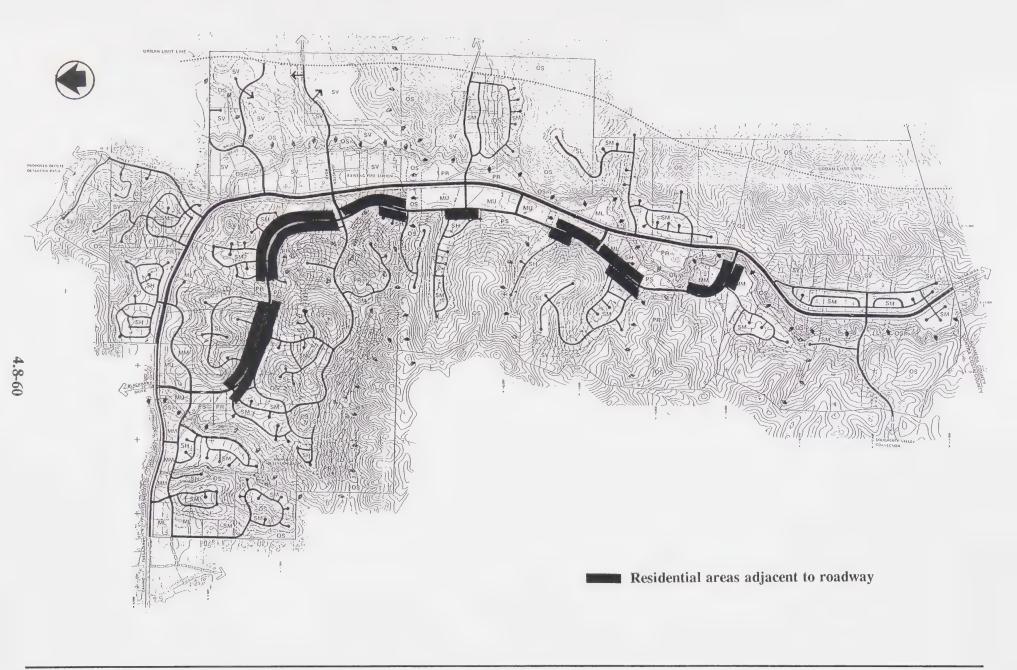


Figure 4.8-27 Residential Uses adjacent to Country Loop Road

Impact 4.8-6 Secondary road layouts will create continuous rows of homes adjacent to Camino Tassajara and the Country Loop Road.

Residential streets parallel to Camino Tassajara and the Country Loop Road, as shown on Figure 4.8-28, are separated from the main roads by only the depth of one lot. This layout will result in views consisting of long lines of homes which will be separated horizontally by 20 feet between units and will possibly be of the same or similar heights, shapes and colors. In two locations, this condition occurs in a continuous line one-half mile or more in length on both sides of the Country Loop Road.

Mitigation Measure

4.8-6 Redesign the secondary road layout to orient more cul-de-sacs to the edges of Camino Tassajara and the Country Loop Road. This would provide a greater varied building profile along the major street edges.

Impact 4.8-7 Recreational facilities may create visual impacts to residential development.

Placement of residential development in close proximity to the sports park proposed in the southern third of the project area and located between Camino Tassajara and Tassajara Creek would create visual impacts to residents overlooking the park. The sports park would include lighted soccer and ball fields, bleachers, a concession stand and other amenities. Also envisioned are two to three tennis courts and basketball/volleyball courts.

Residential development surrounding three sides of the sports park include both single-family and multifamily housing at medium and high densities. The Tassajara Design Guidelines state that lighting of park facilities should not spill over into residential areas, but do not provide specific criteria to prevent spill over. Physical breaks between the lighted sports facilities and future housing would be provided by Tassajara Creek and the suggested guidelines contained in the Tassajara Design Guidelines document. This would help to reduce light trespass onto residential properties; however, the glare of the lights in contrast to the night sky would be visible to residents backing up on the sports park and those overlooking the sports park. The extent of glare would depend upon the type of luminary and height of light pole.

Mitigation Measures

The following mitigation measures are required to reduce the impact of light and glare to a less-thansignificant level.

4.8-7(a) A Lighting Plan should be prepared for the sports park prior to the approval of Final Development Plans for the sports park and nearby residential areas. The plan should be prepared by a qualified lighting engineer acceptable to County staff and ensure the visual impacts of the lighting are minimized to staff's satisfaction.

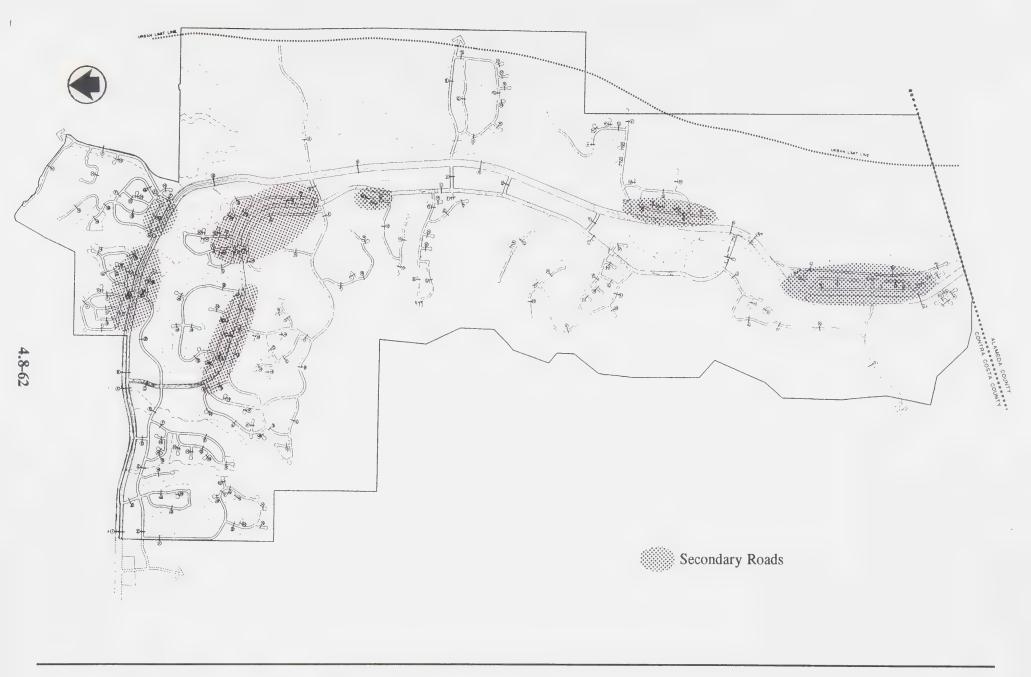


Figure 4.8-28 Secondary Roads Parallel to Major Roads

4.8-7(b) The landscape plan for the sports park should include a tree screen between the sports park and nearby residential development.

Impact 4.8-8 Water tanks serving the site would be easily seen from major roadways and other areas of the site.

Five water tanks serving three water pressure zones would be placed in locations shown on Figure 4.8-29. Sites 1 and 3 are located close to proposed development. However, sites 2, 4 and 5 are prominently placed near the forefront of hills, and may be readily seen from a number of locations.

Each tank would be approximately 100 feet in diameter and 25 feet tall. They would be connected to existing roadways by a 12-foot 6-inch-wide paved service road. Proposed plans call for the tanks to be shielded by raised earth berms and clumps of trees so that the sites will appear as natural oak-covered knolls which blend with the surroundings. Whether this can be achieved on the open hilltops and sides is, however, unknown. A number of other water tanks in the Bay Area have been treated in a similar manner and yet failed to be visually integrated into the natural environment.

Mitigation Measures

All of the following mitigation measures are required to reduce the visual impact of water tanks to a less-than-significant level.

- 4.8-8(a) Water tanks should be located away from visually prominent areas and integrated visually with residential development areas wherever possible, through the use of berming, landscaping and tank color.
- 4.8-8(b) Water tank design and specific landscaping guidelines in the Tassajara Design Guidelines should be expanded and augmented to include criteria and graphic examples of grading and landscaping techniques to ensure a natural blending of water tanks with the surrounding visual environment.
- 4.8-8(c) The following landscaping measures should be integrated into the Design Guidelines:
 - All graded areas should be revegetated with a planting mix similar to existing landscape.
 - A mix of 5-gallon and 15-gallon size, drought-tolerant native trees, such as bay, laurel, live oak, toyon, or buckeye, should be included in the landscaping plan. Trees and shrubs should be planted in clusters to reflect the natural vegetative conditions, rather than in a single line encircling the tank. Faster growing and taller trees should be placed upslope and closer to the tank.

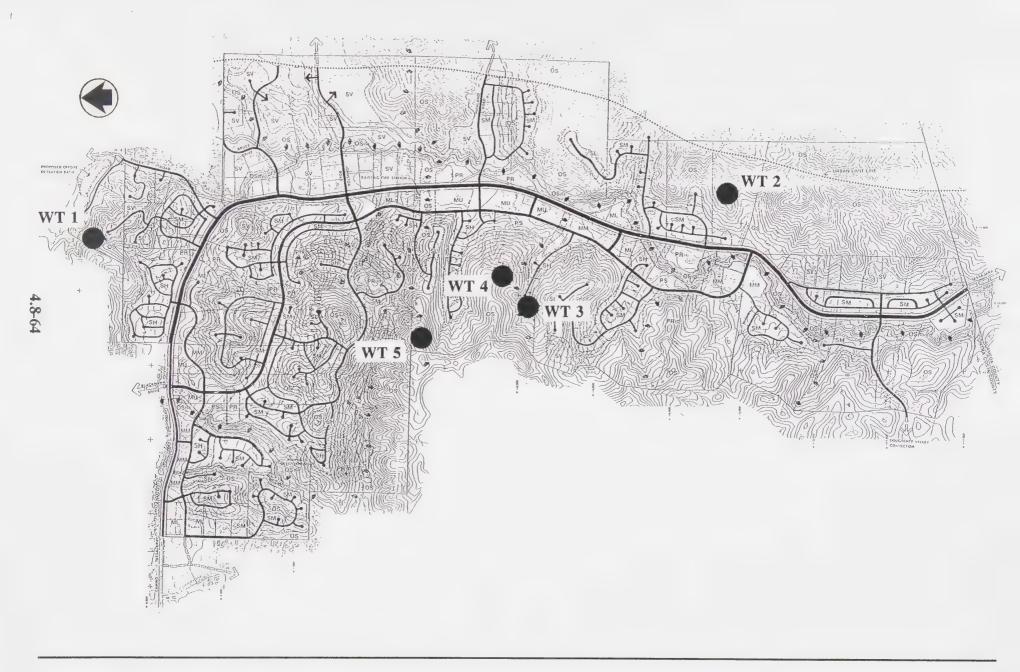


Figure 4.8-29 Water Tank Locations

- Irrigation should be provided for a minimum of five years to achieve faster growth and optimize screening within the shortest possible time.
- Landscaping should be monitored for five years, and unhealthy trees should be replaced as soon as possible.
- 4.8-8(d) The precise location of water storage tanks and pump stations should be identified in the Final Development Plan. Siting should be consistent with Design Guidelines.

Impact 4.8-9 The major project entry at Highland Road would be compromised by the development patterns at its western terminus.

The visual focus along Highland Road as one passes through the Village Center to the Country Loop Road is of a Single-Family High Density complex (Figure 4.8-30). Although the entry road to the residential complex is flanked on either side by segments of a proposed "Town Green," the views of the natural open space which currently exist at the end of Highland Road would be blocked at eye level. Further, the usefulness of any "Town Green" related to the Village Center would be compromised by the Highland Road extension running through it.

Mitigation Measure

4.8-9 An open space or park terminus to Highland Road should be provided that is complementary to a backdrop of the natural open space on the hillside.

Impact 4.8-10 The integration of pad commercial development within largely residential development parcels in the Village Center (MU) areas may impact the visual quality and liveability of those residential areas.

The mixed-use plan for the Village Center area located south of the Highland Road entry shows commercial pad development on two facing corners of the Country Loop Road in areas otherwise devoted exclusively to multi-family housing. The illustrated commercial development extends up to one-half the distance between the Country Loop Road and Camino Tassajara. The allowance of commercial intrusions of this size may limit the ability to plan the residential neighborhoods with a strong sense of unity and a feeling of neighborhood.

Mitigation Measure

4.8-10 The County should require the preparation of a Final Development Plan for each entire mixed use-designated area prior to the approval of any development plans for individual projects within these areas.



Figure 4.8-30 Highland Road Visual Terminus

Impact 4.8-11 Residents exiting the Blackhawk east gate may have their views of the hills blocked by structures in the village center.

Land use compatibility issues may arise for residents of Blackhawk, particularly residents who live near or utilize the east gate entrance. This entry is located directly across Camino Tassajara from the northern mixed use village. Residents exiting Blackhawk would have a direct view into the center. The proposed height limits of the structures within the MU designation would present an imposing view, particularly if the buildings are sited to face into the project and the rear elevation is exposed. The commercial center also brings about other compatibility issues associated with noise and light and glare, particularly at night.

Mitigation Measure

- 4.8-11 The following design measures should be implemented to reduce potential land use compatibility problems to a less-than-significant level:
 - Limit development in the northern village center to two stories in height;
 - Implement design guidelines relative to setbacks and architectural treatment;
 - Site commercial structures so front elevation faces Camino Tassajara and Blackhawk;
 - Establish parking areas behind the buildings to reduce the number of street lights in view of Blackhawk; and
 - Use only downward pointed street lamps to avoid light trespass and glare.

Impact 4.8-12 The Tassajara Design Guidelines as currently proposed may not adequately protect the visual environment of the project.

The Tassajara Design Guidelines are comprehensive in scope and do a great deal to convey the quality and character of development envisioned within the project site. There are, however, a number of specific areas where the guidelines may be inadequate or counter to normal discretionary review procedures. They are as follows:

• The maximum building height is established in the guidelines as three stories or 50 feet, whichever is greater, and a tower or other such limited landmark is allowed up to 75 feet in height. Flat-roofed development up to 50-feet in height would be out of scale with the vision put forward for the Village Centers in the guidelines and the PUD Plan. Likewise, a tower of up to 75 feet, unless limited with regard to its plan dimensions and bulk also could be out of scale and character.

- The Performance Standards for Village Centers located on pages 3 and 4 of the Guidelines do not appear to be very closely related to the anticipated mix of commercial and residential uses envisioned for the centers (e.g., storage of flammable and explosive materials; glare from high temperature processes such as welding; etc.)
- Shared parking is envisioned where more than one land use is located on a site, on adjacent sites or sites separated by an alley (page 10). The joint utilization of parking can be quite beneficial in limiting the overall amount of land devoted to paving. The guidelines call for the elimination of parking requirements for the lesser-demand use in shared situations where the uses have differing time operating characteristics. An example is given of the shared use of a parking resource by a church and an office building.

Special studies of shared parking potentials have been carried out by such organizations as the Urban Land Institute. The reductions suggested by these studies are limited in scope, and reduction formulas are rarely as simple as suggested by the Guidelines. In addition, joint utilization of parking on separately owned development parcels generally require special agreements and the consideration of liability issues.

• The Tassajara Design Guidelines provide "Basic Hillside Guidelines" for hillside areas of 26 percent or above and "Supplemental Hillside Guidelines" for hillside areas with slopes greater than 26 percent and located above elevation 850 feet.

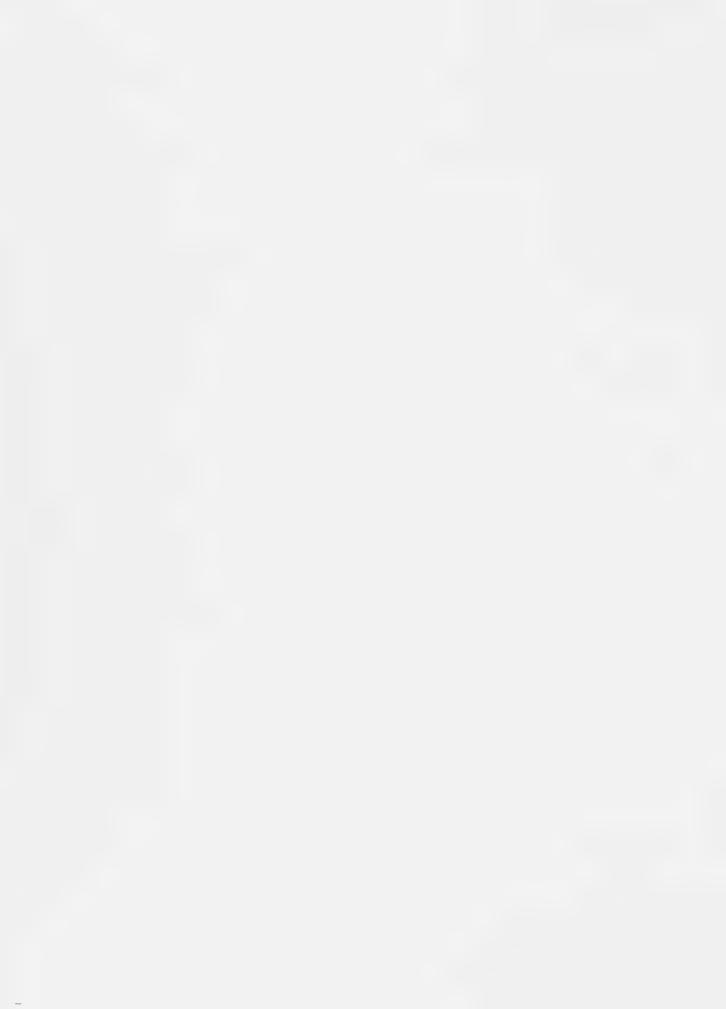
The applicant proposes grading large areas of the site, including the tops of several hills, to produce relatively flat building sites, leaving very few of the original natural areas with slopes over 26 percent. In addition, only a very few building site areas will be above the 850-foot elevation because of water pressure limitations. While the County recognizes the potential need to control development standards on slopes as low as 15 percent (SD-1 Slope Density and Hillside Combining District - Division 814-2 of the Zoning Ordinance), the Tassajara Design Guidelines address only development on slopes exceeding 26 percent.

Mitigation Measures

All of the following mitigation measures are required to reduce the impact of inadequacies in the Design Guidelines to a less-than-significant level.

- 4.8-12(a) Development should be limited in the Village Centers to two stories in height with a third story allowed as a Conditional Use if integrated into a sloping roof structure or set back substantially from the building facades.
- 4.8-12(b) Any building element extending above the 50-foot basic height limit should be restricted to exclude useable floor space and the Tassajara Design Guidelines should be modified to address limitations in tower plan area, profile and bulk.

- 4.8-12(c) The Performance Standards should be rewritten to relate more closely to anticipated issues of land use, circulation, architectural and landscape development compatibility in the mixed-use Village Centers.
- 4.8-12(d) Development of the Village Centers should utilize joint parking resources to the maximum degree possible.
- 4.8-12(e) Reductions in parking requirements should be based upon joint utilization of parking resources and other factors and granted at the discretion of the Zoning Administrator.
- 4.8-12(f) The provisions of Division 814-2 of the County Zoning Ordinance (SD-1 Slope Density and Hillside Development Combining District) should be applied to the project and the Tassajara Design Guidelines should be augmented to address development on slopes between 15 and 26 percent.



4.9 PUBLIC UTILITIES

INTRODUCTION

This section describes the public utility infrastructure for potable water supply; wastewater (sewage) collection, treatment and disposal; use of recycled water (a.k.a. reclaimed water); solid waste (garbage) collection and disposal; gas and electricity supplies; and communications systems, such as telephone and cable television, required for the proposed project.

The water, wastewater and recycled water components analyze the effects of the proposed project on either the East Bay Municipal Utility District (EBMUD), Dublin San Ramon Services District (DSRSD) or Central Contra Costa Sanitary District (CCCSD). Since the initial application, the applicant has requested water and wastewater service from DSRSD. In conjunction with this request, the Contra Costa County Community Development Department, in their letter dated August 24, 1993, requested that DSRSD prepare a plan for the provision of water, wastewater and recycled water services for the project. As a result, a plan-of-services investigation was commissioned by DSRSD (Carollo, 1994) and forms the basis of the water, wastewater and recycled water analysis for this EIR. Since the completion of this Plan of Services, the applicant has revised the Preliminary Development Plan (PDP) and reduced the acreage and number of building units. In this EIR, the water, wastewater and recycled water demand figures have been adjusted to reflect the revised PDP using the same unit demand rates in the DSRSD Plan of Services. The graphics used in this section, taken from the Carollo report, are schematic in nature. (See Appendix A for the TVPOA Plan of Service Investigation - Executive Summary.)

METHODOLOGY

Demands for potable water, wastewater, and recycled water service using DSRSD planning criteria and the assessment of the water distribution and wastewater collection systems required to serve the proposed project were taken from the Plan of Services prepared for the proposed project (Carollo, 1994). The demands were adjusted by Mills Associates to account for changes in the areas and number of dwelling units for each land use in the revised Preliminary Development Plan provided by the applicant. The potential sources of potable water supply and the facilities required for transport and treatment of the water were also discussed in the Plan of Services and were expanded and updated with information obtained in discussions with DSRSD staff (Michalczyk, 1994, 1995). The demands on DSRSD wastewater collection, treatment, and disposal facilities, including the options for developing new methods for treated wastewater disposal within the Livermore-Amador Valley area, were also obtained from the Plan of Services and supplemented through discussions with DSRSD staff.

The position of EBMUD regarding providing potable water service to the proposed project and the demands should EBMUD decide to serve all or a portion of the project were obtained through

discussions with EBMUD staff (Hanoian, 1994, 1995; Kirkpatrick, 1996). The EBMUD Board of Directors has adopted Policy 51 which states they will not serve new development outside its ultimate service boundary unless there is no adverse impact on the quantity, quality, and cost of serving existing and future customers inside its present ultimate service boundary. It should be noted, however, that two properties in or near the proposed Tassajara Valley project are currently requesting water service from EBMUD: the proposed Tassajara Meadows and Wendt Ranch developments. It is likely that the intervening Tassajara Valley Property Owners Association (TVPOA) properties would also be served by EBMUD if these two requests for annexation are approved.

Demands on CCCSD wastewater conveyance, treatment, and disposal facilities using CCCSD planning criteria and the collection system improvements required to serve the proposed project were developed through discussions with CCCSD staff (Leavitt, 1994, 1995).

GENERAL PLAN POLICIES

The provision for public utilities is addressed in several elements of the Contra Costa County General Plan (1996), primarily Land Use, Growth Management, Public Facilities/Services, Conservation and Safety. Contained within each element are goals and policies which must be considered when reviewing the Tassajara project. These elements incorporate requirements set forth in Measure C, approved by the voters in 1988 and 1990 reaffirming that performance standards must be maintained through capital improvement projects. The following General Plan policies focus on the provision of domestic water and recycled water supplies; wastewater collection, treatment and disposal; solid waste collection and disposal; and the supply of gas, electric and telecommunication services.

Land Use Element

Growth Management-65/35 Land Use Plan and Urban Limit Line

- 3-5 New development within unincorporated areas of the County may be approved, providing growth management standards and criteria are met or can be assured of being met prior to the issuance of building permits in accordance with the Growth Management Element.
- 3-6 Development of all urban uses shall be coordinated with provision of essential Community services or facilities including, but not limited to . . . sanitary facilities, water and . . .
- 3-7 The location, timing and extent of growth shall be guided through capital improvements programming and financing (i.e., a capital improvement program, assessment districts, impact fees, and developer contributions) to prevent infrastructure, facility and service deficiencies.
- 3-8 Infilling of already developed areas shall be encouraged. Proposals that would prematurely extend development into areas lacking requisite services, facilities and infrastructure shall be opposed. . . .
- 3-9 Areas not suitable for urban development because of the lack of availability of public facilities shall remain in their present use until the needed infrastructure is or can be assured of being provided.

Growth Management Element

Water and Sanitary Sewer

This element states that the County shall require new development to demonstrate that adequate water and sanitary sewerage service can be provided at the project approval level. The water system shall supply water of adequate quantity and quality for the development. The sewerage system shall adequately collect, treat and dispose of the quantity of sewage generated by the development to the proper quality for disposal. At the subdivision approval stage, the County must consult with the appropriate agency to determine whether 1) capacity exists within the water and sanitary sewer systems if a project is built within a set period of time, or 2) capacity will be provided by a funded program or other mechanism. If neither one nor two above are satisfied, project approvals will lapse if not satisfied by verification that capacity exists to serve the project ("will serve" letters), actual hook-ups or comparable evidence of adequate water quantity and quality availability, or adequate sewage collection and wastewater treatment capacity availability.

Public Facilities/Services Element

Financing Improvements and Public Services

- 7-1 New development shall be required to pay its fair share of the cost of all existing public facilities it utilizes, based upon the demand for these facilities which can be attributed to new development.
- 7-2 New development, not existing residents, should be required to pay all costs of upgrading existing public facilities or constructing new facilities which are exclusively needed to serve new development.
- 7-4 The financial impacts of new development on public facilities should generally be determined during the project review process and may be based on the analysis contemplated under the Growth Management Element or otherwise. As part of the project approval, specific findings shall be adopted which relate to the demand for new public facilities and how the demand affects the service standards included in the growth management program.

Water Service Policies

- 7-16 Water service systems shall be required to meet regulatory standards for water delivery, water storage and emergency water supplies.
- 7-17 Water service agencies shall be encouraged to establish service boundaries and to develop supplies and facilities to meet future water needs based on the growth policies contained in the County and cities' General Plans.

- 7-18 Water service agencies should generally be discouraged from constructing new water distribution infrastructure which exceeds future water needs based on the buildout projections of the County *General Plan* and city general plans.
- 7-19 Urban development shall be encouraged within the existing water Spheres of Influence adopted by the Local Agency Formation Commission; expansion into new areas within the Urban Limit Line beyond the Spheres should be restricted to those areas where urban development can meet all growth management standards included in this *General Plan*.
- 7-21 At the project approval stage, the County shall require new development to demonstrate that adequate water quantity and quality can be provided. The County shall determine whether (1) capacity exists within the water system if a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. This finding will be based on information furnished or made available to the County from consultations with the appropriate water agency, the applicant, or other sources.
- 7-22 Water service agencies shall be encouraged to meet all regulatory standards for water quality prior to approval of any new connections to that agency.
- 7-23 The County shall cooperate with other regulatory agencies to control point and non-point water pollution sources to protect adopted beneficial uses of water.
- 7-24 Opportunities shall be identified and developed in cooperation with water service agencies for use of non-potable water, including. . . reclaimed water . . . for other than domestic use.
- 7-25 Land uses and activities that could result in contamination of groundwater supplies shall be identified, monitored and regulated to minimize the risk of such contamination.
- 7-26 The need for water system improvements shall be reduced by encouraging new development to incorporate water conservation measures to decrease peak water use.
- 7-27 The reclamation of water shall be encouraged as a supplement to existing water supplies.

Water Service Implementation Measures

7-i Conditionally approve all tentative subdivision maps and other preliminary development plans on verification of adequate water supply for the project. Such condition shall be satisfied by verification, based on substantial evidence in the record, that capacity within the system to serve the specific development project exists or comparable demonstration of adequate wastewater [water] treatment capacity. Where no tentative map or preliminary plan is required prior to development, approve no map or development permit without this standard being satisfied.

Sewer Service Policies

- 7-30 Sewer service agencies shall be encouraged to establish service boundaries and develop treatment facilities to meet future service needs based on the growth policies contained in the County and cities' General Plan.
- 7-31 Urban development shall be encouraged within the sewer Spheres of Influence adopted by the Local Agency Formation Commission. Expansion into new areas within the Urban Limit Line but beyond the Spheres of Influence should be restricted to those areas where urban development can meet growth management standards included in this *General Plan*.
- 7-33 At the project approval stage, the County shall require new development to demonstrate that wastewater treatment capacity can be provided. The County shall determine whether (1) capacity exists within the wastewater treatment system if a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism.
- 7-35 Opportunities for using reclaimed wastewater shall be identified and developed in cooperation with sewer service and water service agencies.
- 7-36 Beneficial uses of treated wastewater including marsh enhancement and agricultural irrigation shall be encouraged. Such wastewater reclamation concepts shall be incorporated into resource management programs and land use planning.
- 7-37 The need for sewer system improvements shall be reduced by requiring new development to incorporate water conservation measures which reduce flows into the sanitary sewer system.

Sewer Service Implementation Measures

7-t Conditionally approve all tentative subdivision maps and other preliminary development plans on verification of adequate wastewater treatment capacity for the project. Such condition shall be satisfied by verification based on substantial evidence in the record that capacity within the system to serve the specific development project exists or comparable demonstration of adequate wastewater treatment capacity. Where no tentative map or preliminary plan is required prior to development, approve no map or development permit without this standard being satisfied.

Solid Waste Management Policies

- 7-88 Solid waste disposal capacity shall be considered in County and city land use planning and permitting activities, along with other utility requirements, such as water and sewer service.
- 7-102 Solid waste hauling on collectors and local streets through residential areas should be avoided.

Safety Element

Water Supply Requirements

10-82 New water storage reservoirs shall be encouraged in appropriate locations subject to adequate mitigation of environmental impacts.

WATER

Setting

The current use of the proposed project site is primarily for cattle grazing and equestrian activities. Water for the few residences in the valley is provided by private wells, as the site is not currently located within the service area of a water purveyor. The site is located northeast of the existing service area boundary of DSRSD and southeast of the ultimate service area boundary of EBMUD as shown on Figure 4.9-1.

DSRSD

DSRSD currently distributes and sells potable water in its service area. DSRSD obtains water through a contract with Zone 7 of the Alameda County Flood Control and Water Conservation District (Zone 7). In addition to DSRSD, Zone 7 provides water to the cities of Pleasanton and Livermore and the California Water Service Company, which serves the southern part of Livermore, as well as several small private customers. Zone 7 obtains its water supply from local wells, the State Water Project via the South Bay Aqueduct (SBA), and the local watershed above Del Valle Reservoir. Zone 7 treats a portion of its surface water supply at its Patterson Pass and Del Valle water treatment plants for distribution as potable water. The remainder of its surface water supply is used to recharge the groundwater aquifers (Michalczyk, 1994).

DSRSD has an agreement with Berrenda Mesa Water District (BMWD) for the purchase of 5,000 to 7,000 acre-feet per year (afy) of water entitlements which are intended to serve the Windemere Ranch and Shapell development projects in Dougherty Valley (DSRSD would serve the portion of the Shapell development that is not served by EBMUD). DSRSD also has an option to purchase an additional 5,000 afy of water entitlements from BMWD for use within DSRSD's service area or for future development projects as DSRSD's water service area is expanded.

However, the infrastructure for transporting and treating this water in not in place (Michalczyk, 1994, 1995). The Environmental Impact Report (EIR) for the BMWD-DSRSD water transfer was certified in February 1996. Although the EIR reviewed the initial 5,000 to 7,000 afy transfer, the optional transfer of the additional 5,000 afy would require additional CEQA review. The public agency approval process for this water transfer has not been completed, although litigation regarding the EIR analyzing the overall system of water transfers from State Water Project contractors ("Monterey Principles") was concluded in favor of the transfer on June 20, 1996. In addition, the "place of use"

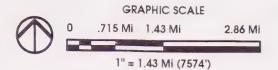
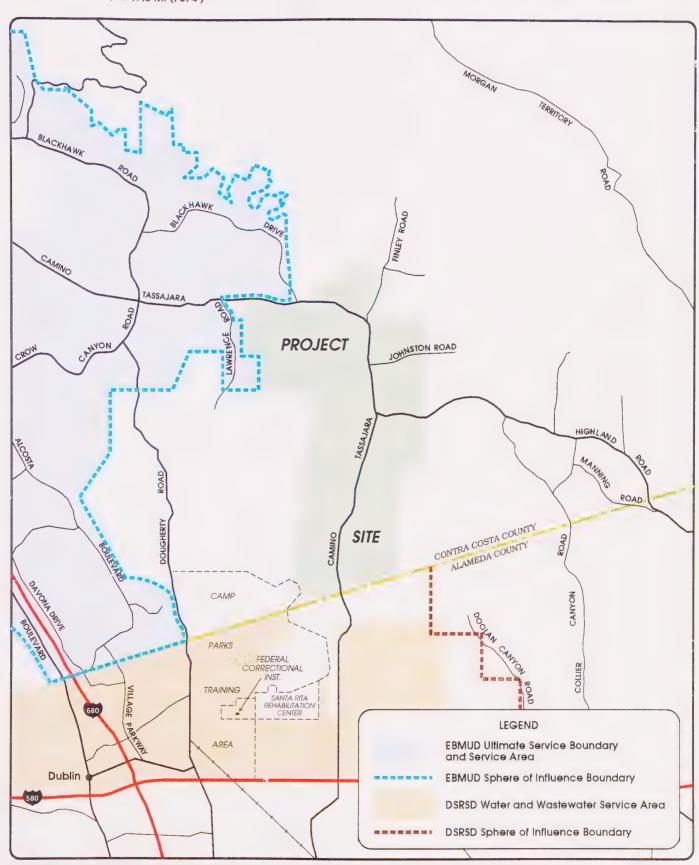


Figure 4.9-1 Boundaries of Water Service Districts in Tassajara Valley



of the State Water Project water right must include the Tassajara Valley if the optional 5,000 afy is to be available for the proposed Tassajara Valley project.

Zone 7 has prepared a "Financial, Institutional, and Operational Analysis of Options for Providing Water for Dougherty Valley" ("FIO Analysis"). The options analyzed include: 1) Full Integration - continuing on as water wholesaler to DSRSD including the 7,000 afy transferred from BMWD and the option for 5000 additional afy, 2) Contractual Special Service — continuing on as DSRSD water wholesaler for only the existing water entitlement (excluding the BMWD water transfer), and 3) Independent Service — discontinuing its contractual relationship with DSRSD. On May 5, 1996, the Zone 7 Board of Directors adopted Option 1 with some conditions. Under this option, the 5,000 afy of water entitlements potentially available pursuant to the BMWD/DSRSD option would be available to any project within Zone 7's service boundary. As such, the Zone 7 Board of Directors would have to approve any expansion of water service to the proposed Tassajara Valley project.

Zone 7 is preparing a supplemental EIR for the facilities within the Livermore/Amador valleys required to implement Option 1. Meanwhile, in September 1996, the Zone 7 Board directed its staff to delay any new requests for service outside the Zone 7 service area for one year (Gambs, 1996).

DSRSD also has rights to extract as much as 645 afy of water from the central portion of the Livermore/Amador Valley groundwater basin. DSRSD also has the right to extract an unlimited quantity of groundwater in the fringe basins (essentially north of Highway 580) without the approval of Zone 7 provided the extraction does not adversely impact the central groundwater basin. Groundwater from the fringe basins may have to be treated (such as by demineralization) to make it palatable. DSRSD can also transfer groundwater pumping quotas with other water purveyors in the Livermore/Amador Valley area, subject to notification to Zone 7 (Michalczyk, 1994, 1995). Water from the main groundwater basin and from the BMWD transfer may only be used within Zone 7's service area.

EBMUD

EBMUD's water supply comes from Pardee Reservoir on the Mokelumne River in the Sierra Nevada foothills and is transported to the East Bay area through the triple-pipeline Mokelumne Aqueduct. EBMUD has water rights for up to 365,000 afy from the Mokelumne River and an additional 150,000 afy from the American River. At present, American River water can only be diverted during the wet weather season, although a proposed joint project with the City of Sacramento for water withdrawal at the mouth of the American River would allow year-round use. In addition to the use of American River water, EBMUD's Water Supply Management Program is considering storing water underground near Lodi in San Joaquin County and raising Pardee Dam.

The EIR for EBMUD's 1993 Water Supply Management Program includes an analysis that indicates EBMUD does not currently have an adequate, reliable supply of water for projected future customers within its ultimate service boundary. Furthermore, based on projected increases in diversions required

by agencies holding Mokelumne River water rights senior to EBMUD's rights, there will be a less than adequate, reliable supply in the future, even for current customers, particularly during drought years. In addition, EBMUD staff believes that Federal and State agencies may adopt regulations that will require increased water releases to protect and restore fisheries in the Mokelumne River, the Sacramento-San Joaquin Delta, and San Francisco Bay (Lampe, 1993; Hanoian, 1994).

The EBMUD Board of Directors has adopted Policy 51 which states that EBMUD will not serve anyone outside its ultimate service boundary unless there is no adverse impact on the quantity, quality, and cost of serving every existing and future customer inside the boundary. Therefore, EBMUD does not intend to serve the proposed Tassajara Valley project until its final Water Supply Management Program is adopted and the requirements of Policy 51 are satisfied (Kirkpatrick, 1996).

East Contra Costa Irrigation District

TVPOA has been in contact with the East Contra Costa Irrigation District (ECCID). ECCID has indicated that they have sufficient excess water supplies to meet the needs of the project. ECCID withdraws water from Indian Slough in the Delta near Discovery Bay. For this water to be utilized by the proposed Tassajara Valley project, ECCID would need to enter into an agreement with DSRSD and transport the required supply to DSRSD's transport and treatment facilities. In addition, a facility would need to be constructed to transport water from the ECCID withdrawal point to the Clifton Court Forebay where it could enter the SBA which would convey the water to DSRSD. The construction of this facility, as well as the transfer itself, would require separate CEQA review as well as other state and local regulatory approval.

Natomas Mutual Water District

Natomas Mutual Water District (NMWD) has up to 30,000 afy of excess surface water entitlements from the Sacramento River that it has preserved through conservation efforts. The project applicants have contacted NMWD and have received a letter of interest in a possible transfer of a portion of NMWD's rights to Sacramento River water. It may be possible for NMWD to transfer a portion of its Sacramento River water entitlement to the Woodbridge Irrigation District (WID). WID has an entitlement to water from both the Sacramento River and the Mokelumne River. Under this scenario NMWD would "wheel" a portion of its Sacramento River water to WID and, in exchange, WID could release a portion of its Mokelumne River Water to EBMUD. EBMUD would then be able to withdraw additional Mokelumne River water for its customers and potentially the Tassajara Valley project. The project applicant has been in contact with WID, but as of this date there have been no agreements reached.

These options would need to be fully analyzed in a CEQA document prepared for any potential American River diversion project.

LAFCO

To provide a water supply to the Tassajara Valley project, Alameda County and/or the Contra Costa County Local Agency Formation Commission (LAFCO) would have to extend the sphere-of-influence of DSRSD to include the proposed project and approve an annexation request. The DSRSD Board of Directors would have to annex the proposed project site into the district's service area. Annexation approved by LAFCO could occur simultaneously with extension of the sphere-of-influence boundary. Alameda County LAFCO might initially have jurisdiction; but they may decide to transfer jurisdiction to the Contra Costa County LAFCO because the proposed project is in Contra Costa County.

Department of Health Services (DOHS)

Potable water supplied to the proposed project will be treated to comply with the drinking water standards of the State Department of Health Services and the standards of the Federal Safe Drinking Water Act. At present, standards for surface water supplies are more stringent than those for groundwater supplies.

Impacts and Mitigation Measures

Significance Criteria

The proposed project would generate significant water supply impacts if it would (1) cause a substantial increase in demand for service above that for which the service agency has planned; (2) cause a substantial decrease in the quality or level of service such that County General Plan performance standards may not be met; (3) is inconsistent with the County General Plan; or (4) requires the extension of a public utility to an area not currently planned for service.

All impacts are considered significant unless stated otherwise. Mitigation measures identified with each impact would reduce the impact to a less-than-significant level unless otherwise noted.

Water Supply by DSRSD

Impact 4.9-1 At buildout, the proposed project would create a demand for 2.55 mgd of potable water which DSRSD can provide only by developing a new water supply.

The proposed project will require an average of 2.55 million gallons per day (mgd) of potable water when the project is fully built out (Carollo, 1994). This amount is equivalent to approximately 2,860 afy and is based on an estimate that each person will use 60 gallons per day. The projected average potable water demand at buildout is summarized in Table 4.9-1. This amount also includes 1.68 mgd for outdoor landscape irrigation in privately-owned areas where recycled wastewater cannot be used.

TABLE 4.9-1
AVERAGE POTABLE WATER DEMAND AT BUILDOUT
USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Type	Dwelling Units ¹	People Per Unit ⁱ	Interior Water Use Per Person (gpd) ²	Interior Water Use Per Unit (gpd)	Interior Potable Water Use (gpd)	Acres	Irrigable Area (%) ³	Gallons Per Acre Per Day	Irrigable Area That Can Use Recycled Water (%) ³	Exterior Potable Water Use (gpd)	Total Potable Water Use (gpd)
sv	Single-Family Very Low	144	3.04	60	182	26,200	383	30	2,530	0	290,700	316,900
SL	Single-Family Low	291	2.94	60	176	51,200	134	50	2,530	0	169,500	220,700
SM	Single-Family Medium	2,451	2.94	60	176	431,400	667	60	2,280	0	912,500	1,343,900
SH	Single-Family High	967	2.45	60	147	142,100	179	40	2,020	0	144,600	286,700
ML	Multi-Family Low	511	1.96	60	118	60,300	71	50	2,020	0	71,700	132,000
MM	Multi-Family Medium	864	1.75	60	105	90,700	72	40	2,020	80	11,600	102,300
MU	Mixed Use	722	1.54	60	92	66,400	68	25	2,020	90	3,400	69,800
PS	Public/Semi-Public ⁴	4		99-09	400	1,600	271	37	2,400	70	72,200	73,800
PR	Parks and Recreation ⁵	7	***		200	1,400	401	55	2,530	100	0	1,400
OS	Open Space		0		200	0	2,245	5	2,530	100	0	0
	TOTAL	5,950 ⁶				871,300	4,491				1,676,200	2,547,500

Values provided by TVPOA.

Source: Carollo, 1994. Adjusted by author to reflect revised Preliminary Development Plan.

² gpd = gallons per day.

Value provided by TVPOA by land use type. May vary by individual site.

Based on 4 subareas of public/semi-public development (4 connections) at 400 gpd each.

Based on 6 parks and 1 golf course (7 connections) at 200 gpd each.

⁶ Dwelling units only; does not include PS or PR land uses.

(An additional average of 0.87 mgd of recycled wastewater will be used at project buildout for landscape irrigation in public areas to reduce the demand for potable water. Refer to Recycled Water later in this section.) The projected demand for potable water is based on installation of low-flow plumbing fixtures currently required by California building codes as well as the other water conservation practices included in the Memorandum of Understanding for Urban Water Use (1992), which DSRSD endorses. The use of potable water at project buildout is anticipated to vary from a low of 1.0 mgd during the rainy season to a high of 5.8 mgd in July.

The proposed project will be built in phases. Phase 1 will be completed in the year 2006, and Phases 2,3, and 4 will all be built between 2007 and 2015. The majority of Phase 2 is to be completed in 2012, while the remaining phases will be completed by 2015. Table 4.9-2 shows the projected average potable water demand in the years 2006, 2012, and an anticipated project buildout in 2015.

TABLE 4.9-2 AVERAGE POTABLE WATER DEMAND BY YEAR USING DSRSD PLANNING CRITERIA

		Total Potable			
Year	Phase 1	Phase 2	Phase 3	Phase 4	Water Use (gpd)
2006	100	0	0	0	1,168,300
2012	100	94	24	73	2,237,500
2015	100	100	100	100	2,547,500

Source: Mills Associates, 1996.

Presently, DSRSD obtains its water from Zone 7. Zone 7 has a sufficient supply of water to serve the projected demands of the four major water purveyors it serves through the year 2000, after which additional supplies will have to be obtained to meet future demands. Therefore, Zone 7 presently does not have a sufficient supply of water to serve any phase of the proposed project (Wong, 1994).

DSRSD's policy is to comply with the policies of the various elements of the County General Plan cited above. Presently, DSRSD does not have an adequate water supply system in place to serve the proposed Tassajara project. To serve the project, DSRSD would have to obtain water from a source other than Zone 7 and DSRSD's permissible withdrawals from the Livermore-Amador Valley groundwater basin. Using water conservation alone to reduce existing water demand in the DSRSD service area and using those reductions as credits to "free up" sufficient potable water to supply the proposed project is impractical given the demand of the project and the limited potential for conservation in the existing DSRSD service area (Carollo, 1994). In recent years, the phenomenon known as "demand hardening" has made it increasingly difficult to reduce water demands during droughts through conserving more water. Prior to the 1987-1991 drought, a water agency could reduce water use by as much as 25 percent by urging its customers to install water-conserving devices and save

water. Since then, however, more and more houses have been equipped with low-flow plumbing fixtures, drip irrigation systems, and drought-tolerant landscaping, and it is now harder to reduce demand for water during droughts.

As stated above in the "Setting" section, DSRSD has an option to purchase 5,000 afy of water entitlements from BMWD for use within the DSRSD service area or for future developments as the DSRSD's water service area is expanded. While these are technically agricultural entitlements, the Monterey Principles, which are endorsed by the State Water Contractors, maintain there will be no difference between agricultural, municipal and industrial water supplies for the purposes of determining cutbacks during times of drought. Two citizens groups and a Plumas County water agency have filed an appeal to a Sacramento County Superior Court ruling upholding the Monterey Principles (The Valley Times, 1996). Therefore, if the Monterey Principles are enacted, the water supply DSRSD obtains through the transfer from BMWD would be as reliable as other supplies obtained from the State Water Project.

If the DSRSD Board of Directors decides to serve the proposed project, this option for 5,000 afy of additional water could be used to satisfy the 2,860 afy demand of the Tassajara Valley project at buildout. The water would be delivered through the State Water Project, and the amount of water delivered each year would be determined by the California Department of Water Resources (DWR). The agreement between DSRSD and the BMWD has been approved by the Kern County Water Agency. The DWR has approved the transfer of water contingent upon implementation of the Monterey Principles. If the Monterey Principles are not implemented, DWR reserves the right to reconsider the transfer. DSRSD is currently seeking cooperation from DWR and Zone 7 for delivery and treatment of the water for the Livermore-Amador Valley (Michalczyk, 1995). Therefore, an adequate water supply for the proposed project can be obtained by DSRSD from BMWD once the Monterey Principles are implemented. However, the infrastructure necessary to deliver and treat the water must be constructed before DSRSD could serve the Tassajara Valley project.

With built-in allowances for unaccounted-for water, possible agricultural-use curtailment, and Delta instream flow requirements (refer to the section on growth inducement for a more detailed explanation of these allowances), DSRSD would receive sufficient water in most years to serve the proposed project. In critically dry years, when the state severely curtails water deliveries through the State Water Project, DSRSD would supply the proposed project with a possible combination of mandatory rationing, spot purchases of water through the State Water Bank, and use of groundwater supplied by Zone 7. DSRSD is also studying the option of storing water at the Semitropic Water Storage District. If these efforts prove fruitful, the stored water could be used to supplement shortages during times of drought (Michalczyk, 1995). Zone 7 has indicated that there will be no reliance on the Livermore-Amador Valley groundwater basin for storage for the Dougherty Valley project, and it is likely that they will continue the policy with respect to the proposed Tassajara Valley project.

DSRSD has also embarked on a water recycling project using the microfiltration and reverse osmosis processes to treat secondary effluent from the DSRSD wastewater treatment plant to a level of quality (primarily through partial removal of total dissolved solids) such that the water can be injected into the central Livermore-Amador Valley groundwater basin for future extraction and use as potable water.

The project must conform with the requirements of Title 22 of the California Code of Regulations and RWQCB Order No. 93-159. To do so, the recycled water must stay in the ground for at least one year before it is extracted, and recycled water can make up no more than 50 percent of the groundwater extracted for potable use. DSRSD has completed initial treatment process and groundwater injection and extraction studies and has certified an EIR for the project. Design of the facilities for 2.5 mgd of capacity will begin in January 1997, and project completion is scheduled for October 1998.

DSRSD has prepared a Plan of Services for the proposed project (Carollo, 1994) which identifies the source of water as well as the facilities required to deliver, treat, and distribute the water to the project. Implementation of the Plan of Services appears feasible. However, the facilities will not be in place to actually serve the Tassajara Valley project at the time of *General Plan* Amendment and Preliminary Development Plan approval by the County. The *Contra Costa County General Plan* Growth Management Element requires new development to demonstrate that adequate water quantity and quality can be provided. Furthermore, at the project approval stage (subdivision map, land use permit, etc.), the County may consult with the appropriate water agency to determine whether (1) capacity exists within the water system, or (2) capacity will be provided by a funded program or other mechanism. If the applicant cannot assure the County that an adequate water supply can be provided, approval of the project would be inconsistent with growth management policies.

Mitigation Measures

All of the following mitigation measures are required to reduce the impact of water demand on DSRSD to a less-than-significant level.

- 4.9-1(a) Prior to approval of any final development plan, subdivision map, or conditional use permit, the applicant and DSRSD should certify that all approvals required to transfer water from BMWD have been obtained, planning for the infrastructure required to deliver and treat the water are well underway, and there is reasonable assurance that potable water can be supplied to meet the demands of the various phases of the proposed project by the dates the various phases are scheduled for implementation. DSRSD and/or Zone 7 will need to prepare an EIR to address the environmental impacts associated with the new water transmission and treatment facilities from the South Bay Aqueduct to the southern boundary of the project site. In addition, DSRSD and/or Zone 7 will have to assure that all property, rights-of-way, and/or easements can be obtained, and certify that a financing plan has been adopted.
- 4.9-1(b) The Development Agreement should require individual applicants of future entitlements to obtain a "will serve" letter from DSRSD prior to approval of a final development plan for each phase of the project.
- 4.9-1(c) Applicants of future entitlements should comply with Section 916-2.002, Adequate Water Supply, of the Contra Costa County Subdivision Ordinance requiring the provision of an adequate water system.

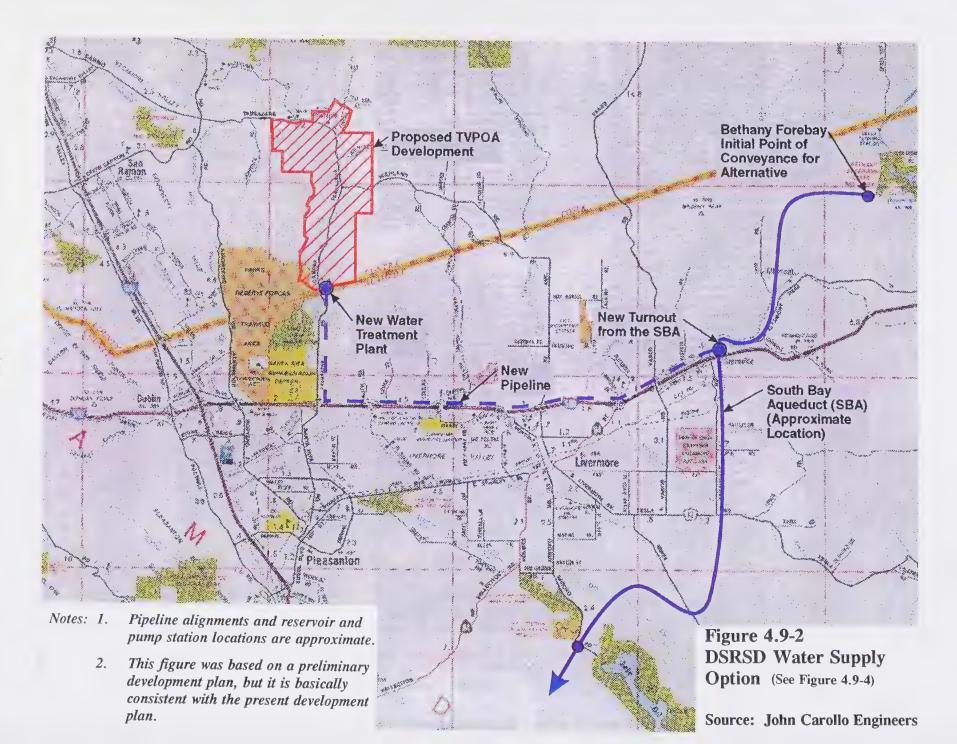
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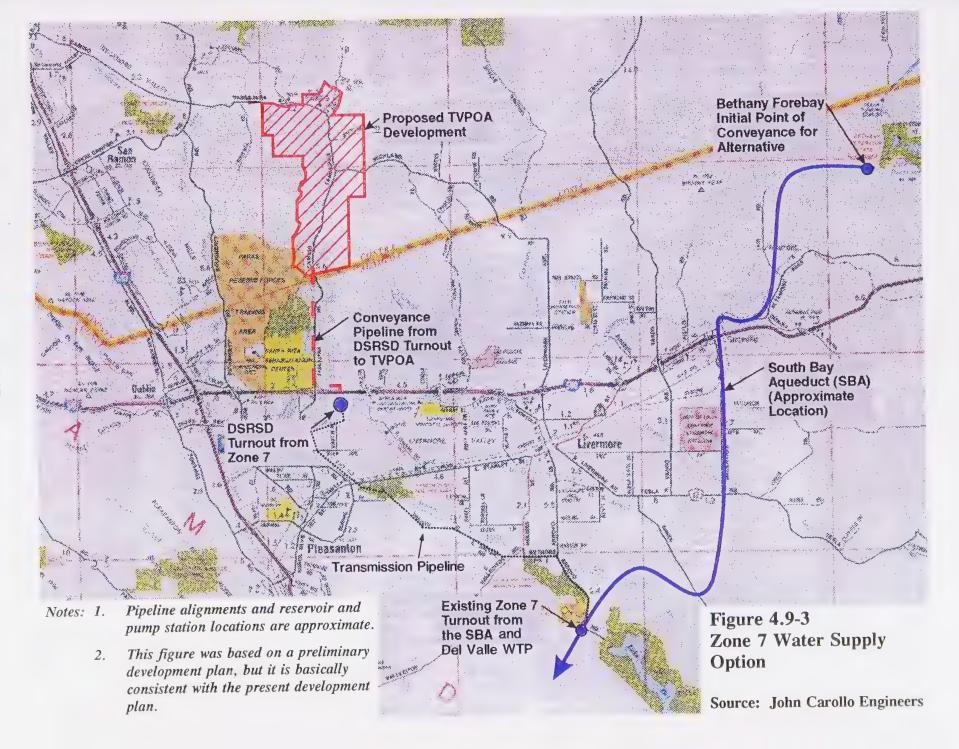
- 4.9-1(d) If sufficient water is not available to meet the water demand projections, the number of dwelling units should be reduced to reflect the available water supply prior to approving the Final Development Plan.
- Impact 4.9-2 Delivery and treatment of a new water supply to serve the proposed project would require the construction of water transmission and treatment facilities by either DSRSD or Zone 7.

The water transferred from the Berrenda Mesa Water District (BMWD) would be delivered to DSRSD from the Sacramento-San Joaquin Delta through the South Bay Aqueduct (SBA). DSRSD could either: (1) construct a new water treatment plant (WTP) and a connecting pipeline from the SBA either on its own or in cooperation with Zone 7, (2) deliver the untreated water to Zone 7 for treatment and return it to DSRSD for distribution, or (3) percolate the raw water into the Amador-Livermore Valley groundwater basin for later extraction through wells. Each of these options is discussed below.

Option 1 - New Water Treatment Plant. With this option, the untreated water would be conveyed via the SBA to a new turnout to be installed near the crossing of Greenville Road and Interstate 580. The water would be conveyed through a 14-mile long pipeline extending west along the north side of Interstate 580 and north along Tassajara Road to a new WTP located at the south end of the proposed project site. A plan for this option is shown on Figure 4.9-2. This new WTP could either be constructed by DSRSD alone or through a cooperative effort by both DSRSD and Zone 7 to serve the future demands in the East Dublin and northern Livermore areas. The initial capacity of the WTP would be 7 mgd, equal to the maximum daily potable water demand of the project at buildout. Sludge created during treatment would be dried in sludge drying beds at the WTP and hauled to a landfill (McHaney, 1994). A treated water clearwell (reservoir) and pump station would be provided at the WTP to lift the water to DSRSD's distribution storage tanks serving Pressure Zone 2, the lowest pressure zone in the Tassajara Valley project. The details of the proposed water supply facilities would be subject to subsequent environmental analysis as required by CEQA.

Option 2 - Treatment by Zone 7. With this option, the untreated water would be conveyed via the SBA to Zone 7's Del Valle WTP located south of Livermore. Following treatment, the water would be transmitted through Zone 7's distribution system to a new turnout on the south side of Interstate 580 between Santa Rita Road and Doolin Canyon Road. From the turnout, the water would be delivered to the project site through a new pump station and transmission pipeline extending west along Interstate 580 and north along Tassajara Road. A plan for this option is shown on Figure 4.9-3. A new transmission pipeline was recently installed to reinforce deliveries of treated water from the Del Valle WTP to the west side of Zone 7's service area, so there is capacity to deliver water to the turnout for the proposed project at Interstate 580 east of Santa Rita Road. The pump station is needed to lift the water from DSRSD's Pressure Zone 1 (the zone in which the turnout is located) to Pressure Zone 2. The pump station and transmission pipeline would be sized to serve only the project.





The Del Valle WTP has a design capacity of 36 mgd. The present maximum daily flow rate at the plant is approximately 24 mgd, so there is excess capacity available (Chahal, 1994). However, the projected demands of future development within Zone 7's existing service area will use all this excess capacity by the end of the century (Wong, 1994). Therefore, Zone 7 most likely would not serve any phase of the Tassajara Valley project with the Del Valle WTP at its present capacity. Zone 7 is planning to construct new water treatment facilities (either on its own or in cooperation with DSRSD as cited in Option 1 above) in the next decade to supplement its present water treatment capacity. The staff of Zone 7 indicated they may be interested in treating and delivering DSRSD's water under contract and delivering it to the turnout to DSRSD. In return for this service, Zone 7 would expect TVPOA to pay the costs of the facilities required to serve the proposed project so there would be no rate increase for the present rate-payers who receive Zone 7 water. Zone 7 also may expect DSRSD's new water supply to improve the reliability and/or quality of Zone 7's supply and provide sufficient high quality water to supplement the existing supply (Wong, 1994).

Option 3 - Groundwater Percolation and Well Extraction. With this option, the untreated water would be discharged from the SBA to the Del Valle Reservoir for subsequent injection into the groundwater aquifers in the Livermore Valley. Additional wells and connecting pipelines, owned and operated by either Zone 7 or DSRSD, would be required to extract the groundwater. At present, Zone 7 well water is disinfected to kill pathogens; no other treatment is provided, and none is anticipated in the foreseeable future under the requirements of the Federal or State Safe Drinking Acts or by the State Department of Health Services (DOHS) (Chahal, 1994). Some wellhead treatment may have to be provided in the future to achieve drinking water standards. There is also a concern that percolation of more water from the Delta, the source of water in the SBA, may increase the dissolved solids content (i.e., salt content) in the central groundwater basin.

The environmental impacts of these three water treatment options should be assessed in a separate EIR with DSRSD as the lead agency. If the proposed capacity of the new delivery and treatment facilities is greater than the maximum daily demand of the proposed Tassajara Valley project at buildout, the EIR should address cumulative environmental impacts.

Mitigation Measure

- 4.9-2 The County should require that applicants for future entitlements of the Tassajara development be responsible for contributing pro rata shares of the following costs:
 - Construction of a water treatment plant and connecting pipeline from the South Bay Aqueduct if DSRSD builds its own facilities to deliver and treat water for the proposed project

or,

• Construction of Zone 7 water treatment and delivery facilities required to serve the project if Zone 7 treats and delivers water to the proposed project

or,

• Construction of new wells, connecting pipelines, and any wellhead treatment facilities if groundwater recharge and extraction is used to supply water for the proposed project.

Water Supply by EBMUD

Impact 4.9-3 The proposed development would create an average demand of 2.4 mgd upon buildout.

The projected water demand for the proposed project at buildout using some typical water use factors experienced in EBMUD's service area is presented in Table 4.9-3. The water use factors for very low and low density single-family residential and medium density multiple-family residential land uses are typical for the San Ramon portion of EBMUD's service area (Hanoian, 1994). The water use factors for the intermediate residential land uses were derived proportionally based on acreage per dwelling unit. However, based on its Policy 51, EBMUD does not plan to serve the proposed Tassajara Valley project at the present time. Should the requirements of Policy 51 be satisfied in the future and the project is considered for annexation to EBMUD, supplemental environmental analysis would be required. In the spirit of Senate Bill 901, EBMUD, if requested by Contra Costa County, would probably prepare a study of the infrastructure improvements required for the District to serve the proposed Tassajara Valley project. This study would not address the water supply issue, however.

It should be noted that the EIRs for the Tassajara Meadows and Wendt Ranch developments assumed that EBMUD is the logical water provider to serve these two developments. There is a portion of the proposed Tassajara project that is located between these two developments. Approximately 537 dwelling units are allocated to this portion of the Tassajara project, thereby creating a water supply demand of 302,332 mgd. The impacts of EBMUD serving the Tassajara Meadows, Wendt Ranch and the intervening TVPOA parcels, between Lawrence Road and Blackhawk Drive, south of Camino Tassajara, have been evaluated in the Wendt Ranch General Plan Amendment EIR (1996). No further analysis is necessary.

Appendix I provides the applicant's views of how the project would affect EBMUD water supply. The EIR consultants did not conduct an analysis of this information.

Mitigation Measure

4,9-3 No mitigation measure is necessary or recommended.

TABLE 4.9-3 AVERAGE POTABLE WATER DEMAND AT BUILDOUT USING EBMUD PLANNING CRITERIA

Land Use Code	Land Use Type	Dwelling Units	Acres	Water Use Factor	Average Water Use (gpd)
SV	Single Family-Very Low	144	383	720 gpd/du	103,700
SL	Single Family-Low	291	134	685 gpd/du	199,300
SM	Single Family-Medium	2,451	667	420 gpd/du	1,029,400
SH	Single Family-High	967	179	325 gpd/du	314,300
ML	Multi Family-Low	511	71	250 gpd/du	127,800
MM	Multi Family-Medium	864	72	215 gpd/du	185,800
MU	Mixed Use	722	68	1,100 gad	74,800
PS	Public/Semi-Public		271	500 gad	135,500
PR	Parks and Recreation	Wa me	401	500 gad	200,500
os	Open Space	60 m2	2,245	60.100	
TOTALS		5,950	4,491	• •	2,371,100

Note: The water use factors used to make this projection do not reflect the relatively high landscape irrigation demand included for very low, low, and medium single-family residences in the water demand projections for service by DSRSD. Also, this projection does not consider the use of recycled water for landscape irrigation of parks, the golf course, or other public areas.

Source: Hanoian, 1994 (adjusted by author).

Potable Water Distribution System

Impact 4.9-4 Excessive noise levels, visibility and power outages are potential problems which could occur with individual components of the potable water distribution system.

The DSRSD Plan of Services (Carollo, 1994) includes the preliminary domestic water distribution plan that is shown on Figure 4.9-4. The distribution system provides service in DSRSD's upper three of their four pressure zones. Two local distribution storage tanks would be constructed to serve each zone to provide reliability and to allow one tank to be taken out of service periodically for cleaning, painting, and repair. Water would be pumped from the lower to the higher zones by means of electric-motor-driven pumps. A summary of the components of the potable water distribution system in the Carollo's plan for DSRSD is presented in Table 4.9-4. Welded steel tanks would be constructed on hillsides approximately 100 feet higher in elevation than the upper boundary of the pressure zone. As shown in Figure 4.9-4, the tanks would be constructed on pads cut into hillsides and not on the tops of the hills (also refer to Section 4.8, Visual Quality/Aesthetics).

The applicant's Design Guidelines provide techniques to locate, design, and landscape water storage tanks to reduce the visual impacts of above-ground tanks. However, as discussed in the Visual Quality/Aesthetics section (Impact 4.8-9), tanks located on sites 2, 4 and 5 are prominently placed near the forefront of the hills and may be visible from a number of locations. The Design Guidelines call for shielding the tanks with berms and landscaping, however it is unknown whether this can be achieved. Furthermore, the guidelines do not provide specific landscaping guidance and are very general in their approach to reducing the tanks' visibility.

The pumps used to lift the water to the higher pressure zones would be powered by electric motors which produce noise when they operate. The noise level of typical booster pumps and motors is about 80 to 90 dB when standing next to the motors. With proper design of the pumphouse, the noise levels can be reduced to 60 dB at the property lines.

Commercial electric power supplies are sometimes temporarily interrupted during severe fires or earthquakes. However, it is considered undesirable to provide emergency standby power generators at the pump stations because of the potential hazards of storing diesel fuel on site and the concern that natural gas pipelines might be severed during a major earthquake. DSRSD's standard practice is to provide emergency electrical switch gear at all water pump stations to allow a portable generator to be connected to those facilities during emergencies.

Mitigation Measures

All of the following mitigation measures are required to reduce impacts to a less-than-significant level.

- 4.9-4(a) Include the following landscaping measures in the Design Guidelines:
 - Revegetate all graded areas with a planting mix similar to existing landscape.

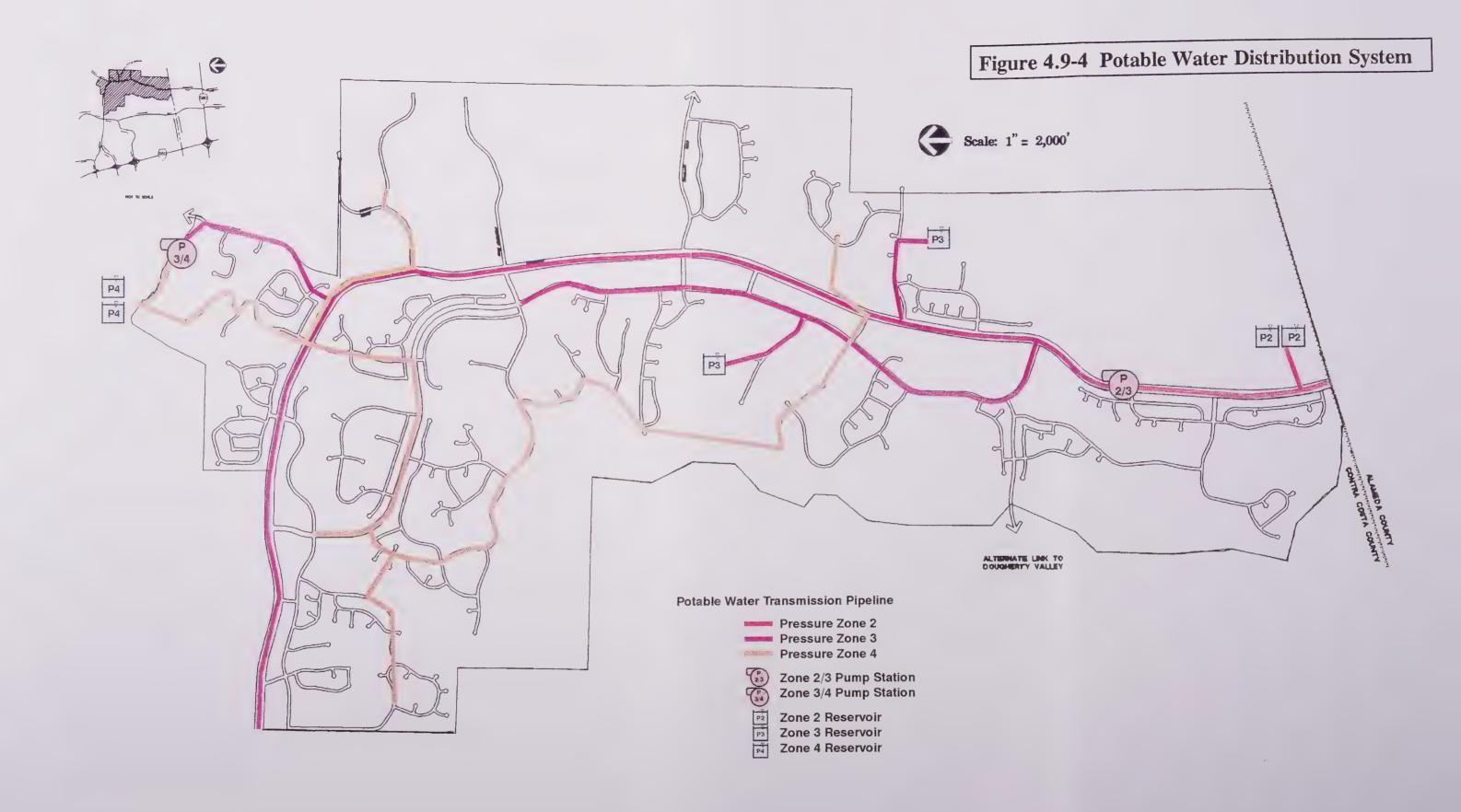
TABLE 4.9-4
POTABLE WATER DISTRIBUTION SYSTEMS COMPONENTS
DSRSD PLAN OF SERVICES FOR TVPOA

		Amo	Total			
Description	Units	1	2	3	for Buildout	
Potable Water Mains					(Linear Feet)	
10" diameter	LF^{1}	5,600		5,200	10,800	
12" diameter	LF	5,100	3,800		8,900	
14" diameter	LF	3,600	9,300		12,900	
16" diameter	LF	3,400	6,100		9,500	
20" diameter	LF	12,600	8,000	-	20,600	
24" diameter	LF	19,700	2,600		22,300	
30" diameter	LF	1,500			1,500	
36" diameter	LF	7,400			7,400	
Total		58,900	29,800	5,200	93,900	
Pump Stations						
Zone 2/3	EA^2	1			1	
23.6 mgd						
Zone 3/4	EA	1			1	
10.8 mgd						
Reservoirs						
Zone 2	EA			2	2	
363,000 gallons						
Zone 3	EA	2			2	
2,974,000 gallons						
Zone 4	EA	2			2	
1,873,000 gallons						

¹ Linear feet.

Source: Carollo, 1994.

² Each.



- Notes: 1. Pipeline alignments and reservoir and pump station locations are approximate.
 - 2. This figure was based on a preliminary development plan, but it is basically consistent with the present development plan.



- Include a mix of 5-gallon and 15-gallon size, drought-tolerant native trees, such as bay, laurel, live oak, toyon, or buckeye, in the landscaping plan. Cluster trees and shrubs to reflect the natural vegetative conditions, rather than in a single line encircling the tank. Place faster growing and taller trees upslope and closer to the tank.
- Provide irrigation for a minimum of five years to achieve faster growth and optimize screening within the shortest possible time.
- Monitor landscaping for five years, and replace unhealthy trees as soon as possible.
- 4.9-4(b) Refer to mitigation measure 4.8-8(a).
- 4.9-4(c) The precise locations of domestic water storage tanks and pump stations should be identified on the Final Development Plan. The precise locations, site preparation, and landscaping should be consistent with the applicant's Design Guidelines and other zoning standards.
- 4.9-4(d) DSRSD should confirm that exterior noise levels outside pump stations would not exceed 60 dB at the pump station property lines.

Impact 4.9-5 Extending water service to the project site may be inconsistent with the *General Plan*.

Development of the Tassajara Valley as proposed would extend water service beyond existing Spheres of Influence adopted by LAFCO, which is inconsistent with Policy 7-19 of the General Plan. The policy also states that where development occurs within the Urban Limit Line but beyond any water supply agency's Sphere of Influence, it should be restricted to areas where development can meet all growth management standards included in the General Plan. The applicant has not demonstrated that all growth management standards can be met, including the provision of an adequate water supply, because all of the actions required to secure the water supply have not yet occurred, and the facilities and pipelines necessary to treat and deliver the water have not been built. As discussed in Impact 4.9-1 above, the applicant has requested that DSRSD provide water. DSRSD has executed an agreement to purchase water entitlements from the Berrenda Mesa Irrigation District. The Kern County Water Agency and the State Department of Water Resources have approved the transfer of the water subject to adoption of the Monterey Principles. However, the physical facilities required to convey, treat, and distribute the water are not in place. These facilities will be subject to additional environmental review and documentation. DSRSD is discussing several options for delivery and treatment of the water with Zone 7, although they also have the option of constructing delivery and treatment facilities on their own.

Policy 3-8 calls for infilling already developed areas and opposing the premature extension of development where requisite services, facilities and infrastructure are lacking. Currently, the project site is not served by any water agency. Although the site abuts DSRSD's water service area at Camp Parks, there is no feasible route for extending services through the rugged terrain in this area. The southern boundary of the project site abuts DSRSD's Sphere of Influence at the Alameda-Contra Costa county border. However, extending water service from DSRSD could be considered premature because waterlines would need to be extended across undeveloped intervening parcels.

The project site is contiguous to the EBMUD service area, however present EBMUD's Policy 51 prohibits extending water service outside their ultimate service boundary until an adequate long-term water supply source can be secured.

County Policies 7-1 and 7-2 call for new development to pay all costs of upgrading or constructing new facilities needed to serve new development. The applicant and future developers should be financially responsible for the expansion of treatment facilities. The applicant's Public Facilities Implementation Plan includes an estimated cost to install five water tanks, but does not account for the cost of treating and supplying water to the site from the water provider. The plan suggests that as the phases of the Tassajara Valley project are built out, the costs will be financed from the system capacity charges, connection fees, and monthly service charges. DSRSD may have to increase connections fees and/or monthly service charges to the Tassajara Valley property owners to recover the full cost of the water supply system.

Mitigation Measures

The following mitigation measures are required to reduce the impact of General Plan inconsistency to a less-than-significant level.

- 4.9-5(a) Refer to mitigation measure 4.9-1(a).
- 4.9-5(b) Prior to approval of the Final Development Plan, the applicant should revise the Public Facilities Implementation Plan to reflect the final plan for water supply facilities and the projected costs for providing the water supply needed to serve each phase of the project. The plan should further identify how the costs for providing water service will be divided between the applicant and property owners or developers of future projects in the area who will benefit from the new water supply.

WASTEWATER

Setting

The proposed project site is currently used for cattle grazing, equestrian and dryland farming activities. The few houses in the valley have septic tanks for sanitary wastewater disposal. Lot splits are resulting

in additional new septic tanks. The project site is not currently within the service area of any existing wastewater service agency. The site is located northeast of the existing service area boundary of the Dublin San Ramon Services District (DSRSD) and southeast of the service area boundary of the Central Contra Costa Sanitary District (CCCSD) as shown on Figure 4.9-5.

The applicant has requested wastewater service from DSRSD, and the DSRSD Plan of Services (Carollo, 1994) includes a proposed wastewater collection system. CCCSD has indicated a willingness to serve the development should DSRSD decide not to. This EIR considers three wastewater service scenarios: (1) service solely by DSRSD, (2) service solely by CCCSD, and (3) service by both DSRSD and CCCSD.

DSRSD

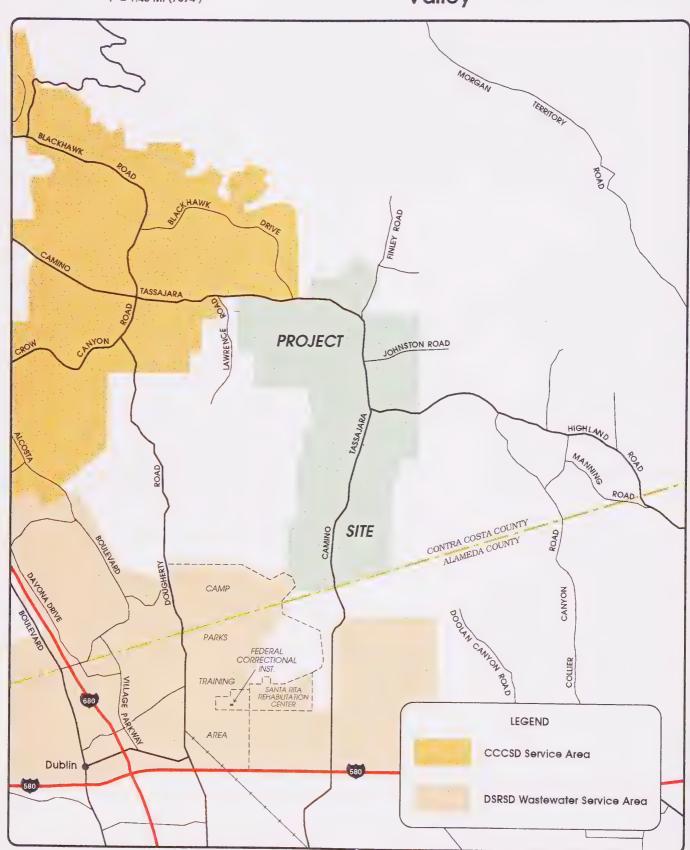
DSRSD has an existing trunk sewer system which conveys wastewater from the vicinity of Interstate 580 and Hopyard Road (where the proposed project would connect into the DSRSD sewer system) to the DSRSD wastewater treatment plant (WWTP) located near Stoneridge Road and Interstate 680 in Pleasanton. The sizes of the trunk sewers increase from 30 to 48 inches in diameter from Hopyard Road to the WWTP.

The existing DSRSD WWTP is an activated sludge secondary treatment facility which treats wastewater collected from the DSRSD service area as well as the City of Pleasanton under contract with DSRSD. The plant currently has an average dry weather flow capacity of 11.5 mgd (National Pollutant Discharge Elimination System (NPDES) Permit CA00376160). At present, the plant treats an average flow of approximately 9 mgd. Influent holding ponds are used to attenuate the peak flows that arrive at the WWTP so the treatment process units are not hydraulically overloaded. The capacity of the influent holding ponds is 30.7 million gallons (NPDES permit). The largest flow ever to enter the influent holding ponds was estimated to be approximately 25 mgd in February 1986 (Swanson, 1994).

The DSRSD Wastewater Treatment Plant Master Plan (Brown and Caldwell, 1984) states that the DSRSD WWTP can be expanded within the confines of its present site to provide 22 mgd of average dry weather flow and an unequalized peak flow of 58.7 mgd. An addition 14 mgd of average dry weather capacity could be provided by constructing additional facilities on land owned by DSRSD north of Stoneridge Drive. This excess plant capacity would be available to approved developments within DSRSD's existing service area or in areas approved for annexation to DSRSD's service area.

Following treatment, plant effluent is combined with secondary effluent from the City of Livermore plant and exported west via the Livermore Amador Valley Water Management Agency (LAVWMA) pump station in Pleasanton and a pipeline over the summit of Interstate 580. Holding basins at the pump station are used to attenuate peak storm-related flows prior to pumping. The exported effluent is combined with treated effluent from the wastewater treatment agencies that make up the East Bay Dischargers Authority (EBDA) and discharged through the EBDA pipeline and outfall into San Francisco Bay west of the Oakland Airport. LAVWMA is permitted to discharge peak treated wastewater flows that result from rain storms into San Lorenzo Creek at a release valve upstream of the connection of the LAVWMA pipeline to the EBDA pipeline.

Figure 4.9-5 Boundaries of Wastewater Service Districts in Tassajara Valley



The existing agreement between LAVWMA and EBDA limits the current export capacity from the three Tri-Valley dischargers to the following maximum quantities:

DSRSD: 4.769 mgd
City of Pleasanton: 7.503 mgd
City of Livermore: 8.728 mgd

Total: 21.000 mgd

When the average dry weather wastewater flow from any of the three Tri-Valley dischargers reaches that agency's contractual limit, there will be no more available capacity in the LAVWMA pipeline for new development within that agency's service area unless (1) that agency can acquire available pipeline capacity from one of the other two dischargers so the total combined discharge through the LAVWMA pipeline does not exceed 21 mgd, or (2) a new agreement is negotiated between LAVWMA and EBDA for capacity greater than 21 mgd in the EBDA pipeline and capital improvements (i.e., a new larger diameter pipeline or a parallel pipeline) are made to increase LAVWMA export capacity to more than 21 mgd. If neither of these events takes place, disposal of wastewater from future developments in the DSRSD service area must occur elsewhere.

DSRSD is a member of the Tri-Valley Wastewater Authority. The Authority developed alternative plans and prepared EIRs for export of untreated wastewater to CCCSD and EBMUD for treatment and disposal. Neither alternative received much public support, and one EIR was successfully challenged in court. As a result, Tri-Valley Wastewater Authority has not been very active in recent months.

CCCSD

CCCSD provides wastewater collection, treatment, and disposal service for a large urban and suburban area in central Contra Costa County including the cities of Orinda, Moraga, Lafayette, Walnut Creek, Pleasant Hill, Martinez, Danville, and the northern portion of San Ramon, plus the adjacent unincorporated areas of the County including the communities of Alamo and Pacheco. CCCSD also provides wastewater treatment and disposal service to the cities of Concord and Clayton under contract.

A sewer system is in place which conveys wastewater north from CCCSD's service area to its WWTP located near Highways 680 and 4 in Pacheco. The Larwin Pump Station in San Ramon pumps wastewater north through the San Ramon Interceptor. In addition, there is an existing trunk sewer along Camino Tassajara at the north end of the Tassajara Valley project site which primarily serves the Blackhawk development. This trunk sewer drains by gravity into the San Ramon Interceptor. The San Ramon Interceptor extends north along the former Southern Pacific Railroad right-of-way and Hartz Avenue in Danville. This interceptor, in turn, drains into the A-line interceptor that extends through Walnut Creek and along the east side of Highway 680 to the CCCSD WWTP. A relief sewer will be constructed in the next decade parallel to the A-line interceptor between Ygnacio Road in Walnut Creek and Buchanan Field in Concord. This sewer will accommodate the projected increase in wet weather flows in CCCSD's service area.

The existing CCCSD WWTP is an activated sludge secondary treatment facility with an average dry weather flow capacity of 45 mgd. The headworks and primary treatment facilities have peak wet weather flow capacities 200 mgd. Interstage holding ponds are provided to detain the primary effluent. The holding ponds allow the secondary treatment facilities and the effluent outfall to operate at peak wet weather flow capacities of 90 and 83 mgd respectively without being hydraulically overloaded. Following treatment, the treated effluent is discharged north through the CCCSD outfall into Suisun Bay (Leavitt, 1994).

Over the past several years, the CCCSD WWTP has treated an average of 34 mgd. The highest peak flow on record was approximately 200 mgd in February 1986 (the actual peak flow would have been greater except the collection system experienced overflows). The remaining unused dry weather flow capacity is available for new developments which may be approved in the future by land-use planning jurisdictions served by CCCSD. The EIR for the last plant expansion envisioned serving a population of 451,500 projected by the Association of Bay Area Governments in the year 2000 (Jefferson & Associates, 1982). In October 1995, the plant was serving 404,000 people.

A 15 mgd plant expansion project is scheduled for 2002 in the CCCSD Capital Improvement Plan, but it probably will be delayed until later in the decade because existing available capacity is not being used as rapidly as previously envisioned. There is sufficient land at the WWTP site for this expansion, and no unavoidable adverse impacts are anticipated from the construction of the additional treatment facilities. An EIR will be prepared for the plant expansion. Approval must be obtained from the RWQCB to increase the average dry weather discharge above 45 mgd. Although said approval is anticipated, unforeseen future regulatory constraints regarding discharge of toxic contaminants from the WWTP could restrict future connections to the CCCSD system (Leavitt, 1994, 1995).

LAFCO

To provide wastewater collection, treatment, and disposal for the proposed project, the Contra Costa County LAFCO would have to extend the sphere-of-influence boundary of DSRSD or CCCSD to include site of the proposed project. The board of directors of the selected district would have to annex the proposed project site into the district's service area. Annexation could occur simultaneously with extension of the sphere-of-influence boundary. LAFCO could also extend the spheres-of-influence boundaries of both districts to serve those portions of the proposed project. If DSRSD serves the project, Alameda County LAFCO might have jurisdiction and would have to decide to either consider the matter or transfer it to the Contra Costa County LAFCO for decision.

Regional Water Quality Control Board

The quality of treated effluents from both the DSRSD and CCCSD wastewater treatment plants is regulated by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), which issues discharge permits under the federal National Pollutant Discharge Elimination System for discharges to the navigable waters of the United States. These permits are designed to

protect the beneficial uses of the receiving waters (San Francisco Bay for DSRSD and Suisun Bay for CCCSD); the beneficial uses are described in the San Francisco Bay Basin Plan, which was prepared (and is periodically revised) by the RWQCB. Future uses of recycled water will the subject to waste discharge permits, which are also issued by the RWQCB under state authority.

Impacts and Mitigation Measures

Significance Criteria

The proposed project would generate significant wastewater service impacts if it would (1) cause a substantial increase in demand for wastewater service above that for which the service agency has planned; (2) cause a substantial decrease in the quality or level of service such that County General Plan performance standards may not be met; (3) is inconsistent with the County General Plan; or (4) requires the extension of a public utility to an area not currently planned for service.

All impacts are considered significant unless stated otherwise. All mitigation measures would reduce the impact identified to a less-than-significant level unless noted otherwise.

Wastewater Service by DSRSD

Wastewater Generation

Impact 4.9-6 At buildout, the proposed project would generate approximately 1.23 mgd of wastewater during dry weather and a peak wastewater flow of approximately 5 mgd during wet weather.

The following discussion of wastewater service includes three types of wastewater flows. These types are: (1) dry weather flow, (2) wintertime flow when it is not raining, and (3) peak flows that occur when it rains. The average dry weather is projected to be 1.2 mgd at buildout of the proposed project (Carollo, 1994). The projected average dry weather wastewater flow at buildout is summarized in Table 4.9-5.

The proposed project will be built in phases. Phase 1 will be completed in the year 2006, and Phases 2,3, and 4 will all be built between 2007 and 2015. The majority of Phase 2 to completed in 2012, while the remaining phases will be completed by 2015. Table 4.9-6 shows the projected average dry weather wastewater flow in the years 2006, 2012, and at project buildout in 2015.

TABLE 4.9-5
AVERAGE DRY WEATHER WASTEWATER FLOW AT BUILDOUT USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Description	Number of People	Base Wastewater Flow Per Person (gpd)	Total Base Wastewater Flow (gpd)	Number of Dwelling Units	Base Inflow and Infiltration Per Dwelling Unit (gpd)	Total Base Inflow and Infiltration (gpd)	Total Average Dry Weather Flow (gpd) ¹
sv	Single-Family - Very Low	438	60	26,300	144	60	8,600	34,900
SL	Single-Family - Low	856	60	51,400	291	60	17,500	68,900
SM	Single-Family - Medium	7,198	60	431,900	2,451	60	147,100	579,000
SH	Single-Family - High	2,369	60	142,100	967	60	58,000	200,100
ML	Multi-Family - Low	1,002	60	60,100	511	60	30,700	90,800
MM	Multi-Family - Medium	1,512	60	90,700	864	60	51,800	142,500
MU	Mixed Use	1,112	60	66,700	722	60	43,300	110,000
PS	Public/Semi-Public ²	***		1,600	4	60	500	2,100
PR	Parks and Recreation ³	**		1,400	7	60	400	1,800
os	Open Space		ark with	0	0	60	0	0
Total		14,487		872,200	5,950 ⁴		357,900	1,230,100

Average dry weather flow equals base wastewater flow plus base inflow and infiltration. gpd = gallons per day.

Source: Carollo, 1994. Adjusted to reflect revised Preliminary Development Plan.

Based on 2 subareas of public/semi-public development (2 connections) at 400 gpd each.

Based on 6 parks and 1 golf course (7 connections) at 200 gpd each.

Dwelling units only; does not include PS or PR land uses.

TABLE 4.9-6
AVERAGE DRY WEATHER WASTEWATER FLOW BY YEAR
USING DSRSD PLANNING CRITERIA

Year	Phase 1	Percent of Dwelli Phase 2	ng Units Built Phase 3	Phase 4	Total Average Dry Weather Flow (gpd)
2006	100	0	0	0	639,800
2012	100	94	24	73	1,079,600
2015	100	100	100	100	1,230,600

Source: Mills Associates, 1996.

These average dry weather flows are based upon a wastewater generation rate of 60 gallons per person per day plus a base infiltration and inflow rate of 60 gallons per dwelling unit per day. According to the Carollo plan, base infiltration and inflow occurs "because groundwater seeps into the sewer pipes year round" (Carollo, 1994). Therefore, the average daily wastewater flow at buildout is projected to vary from 1.2 mgd in the dry month of August to 1.5 mgd in the wet month of February. The addition of 1.5 mgd to the present average DSRSD WWTP flow of 9 mgd would result in an average flow of 10.5 mgd, which is less than the present WWTP dry weather capacity of 11.5 mgd.

Peak wet weather wastewater flows from the proposed project will be greater, however, because they include rainfall-derived infiltration and inflow. Peak wet weather flow projections for the Tassajara Valley project are based on a series of storms that occurred in February 1986 and produced the highest flow ever recorded at the DSRSD WWTP. Based on the 1986 design storm, the instantaneous peak wastewater flow for the Tassajara Valley will be 5 mgd at buildout (Carollo, 1994). Since the proposed project is located within an enclosed valley that naturally drains to the south, there will be no additional developments within the watershed which will contribute to and increase the wastewater flows from the Tassajara Valley project at buildout. The addition of 5 mgd to the historic highest peak flow of 25 mgd at the WWTP would result in a instantaneous peak flow of 30 mgd. Since the peak flow is instantaneous and would not last all day, the influent volume will be less than the present WWTP influent holding pond capacity of 30.7 million gallons. However, with the addition of other new developments proposed for the DSRSD service area, the peak hydraulic capacity of the DSRSD WWTP would have to be increased.

Infiltration - when water in the ground seeps into the sewer pipes through cracks and leaking joints.

Inflow - when surface water enters the sewer system through cleanouts, manhole covers, and illegal downspout and area drain connections.

The majority of the wastewater generated by the Tassajara Valley project would be of domestic origin and not subject to source controls. However, certain commercial establishments may generate wastewater subject to source control (e.g., grease traps at restaurants, etc.) under either DSRSD's or CCCSD's industrial waste ordinances.

The DSRSD Board of Directors has adopted a policy whereby they can provide "no-net-demand" service to new development projects (DSRSD Resolution No.34-94). The "no-net-demand" may be accomplished by such means as the DSRSD Board may select. For wastewater disposal, these means could consist of providing storage and/or reuse of the wastewater (preferably within the development project) or participating in funding recycled water infrastructure in other parts of DSRSD's service area. The DSRSD Board of Directors has not yet designated any proposed development projects as "no-net-demand" projects.

Mitigation Measures

The following mitigation measures are required to reduce the impact to a less-than-significant level.

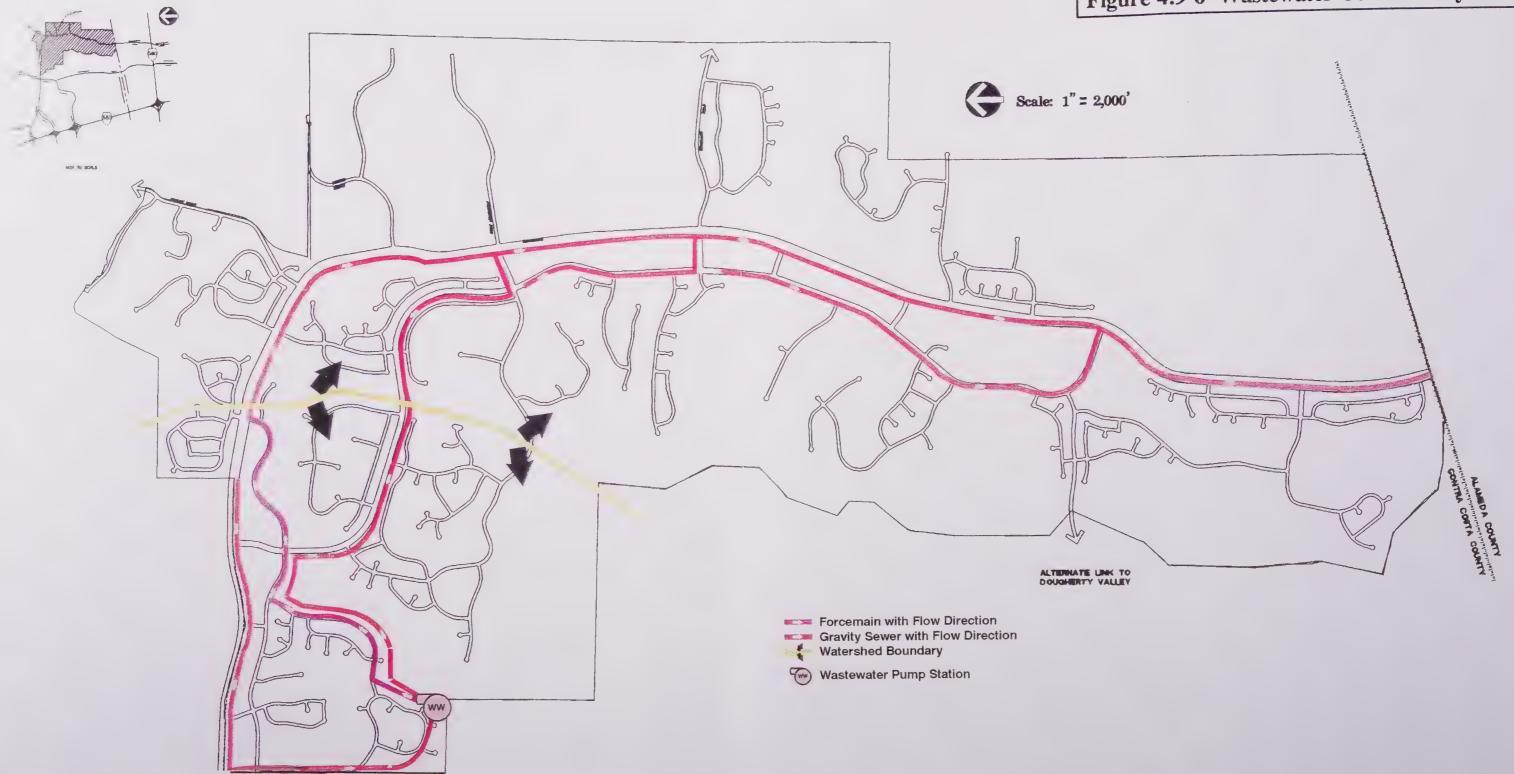
- 4.9-6(a) The applicants should comply with Section 916-4.002, Sewerage Requirements, of the Contra Costa County Subdivision Ordinance requiring the provision of sewage service to a subdivision by a public sanitation district or utility having adequate plant and facilities.
- 4.9-6(b) The County should require that applicants for future entitlements be responsible for contributing their pro rata share of the costs for facilities to properly collect, treat, and dispose of wastewater generated by the proposed project.

Wastewater Collection

Impact 4.9-7 Insufficient capacity exists in the existing DSRSD sewer system to accommodate the proposed project and other future developments to be served with the system.

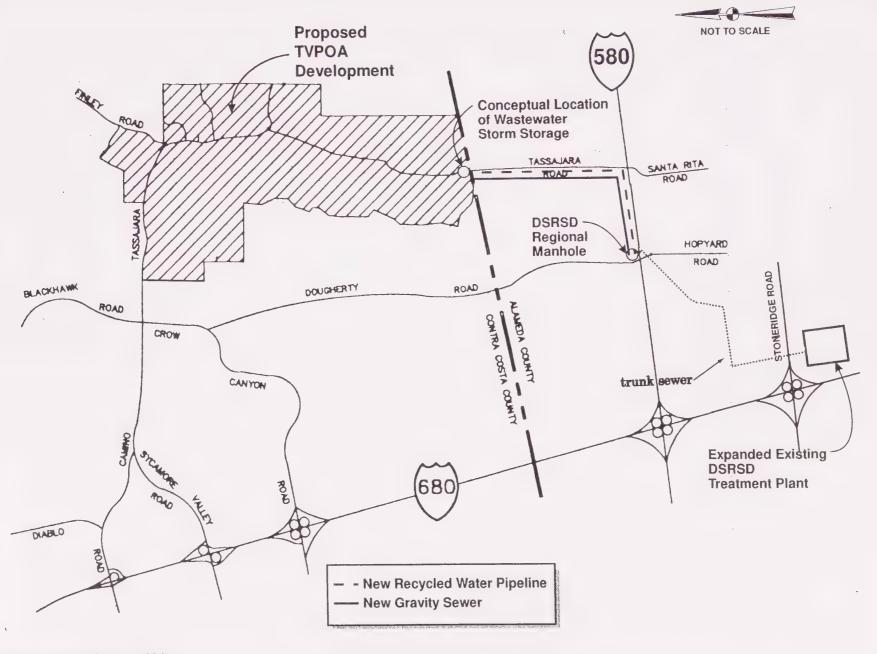
A preliminary wastewater collection plan for proposed project with service by DSRSD which is shown on Figure 4.9-6 (Carollo, 1994). A natural watershed boundary exists across the northwestern portion of the proposed project. The area west of the boundary naturally drains by gravity to the west toward San Ramon while the remainder of the valley drains to the south toward Dublin. If DSRSD serves the proposed Tassajara Valley project as well as the Dougherty Valley development, DSRSD can serve the entire Tassajara Valley project by gravity flow. Otherwise, a raw sewage pump station would need to be constructed at the lowest elevation in the western portion of the Tassajara Valley project site to pump wastewater up over the watershed boundary to drain by gravity flow to the south along Tassajara Road toward the existing DSRSD facilities. A plan of the wastewater conveyance facilities from the proposed Tassajara Valley project to the DSRSD WWTP is shown of Figure 4.9-7. A summary of the components of the wastewater collection for DSRSD is presented in Table 4.9-7 (Carollo, 1994).

Figure 4.9-6 Wastewater Collection System



Notes: 1. Pipeline alignments and reservoir and pump station locations are approximate.

2. This figure was based on a preliminary development plan, but it is basically consistent with the present development plan.



Source: John Carollo Engineers, 1994

Figure 4.9-7 Wastewater Conveyance with Treatment at DSRSD Plant

TABLE 4.9-7
COMPONENTS OF WASTEWATER COLLECTION SYSTEM

	Amount for Each Phase						
Description	Units		2	31	for Buildout		
Sewer Mains							
8" diameter gravity	LF ²	10,300	7,900		18,200		
10" diameter gravity	LF	6,900	1,400	***	8,300		
12" diameter gravity	LF	7,300			7,300		
15" diameter gravity	LF	15,800			15,800		
18" diameter gravity	LF	-		-			
21" diameter gravity	LF	2,800	sale da tao	m 40 to	2,800		
24" diameter gravity	LF	3,500			3,500		
Total		46,600	9,300		55,900		
Force Main							
8" diameter	LF	8,200	~~		8,200		
Manholes ³	EA⁴	100	20		120		
Pump Station, Number	EA	1			1		
Pump Station capacity ⁵	mgd	2.35			2.35		

Phase 3 does not include additional facilities because individual street sewers are not included in this estimate. Sewer mains to serve Phase 3 would be built during earlier phases.

Source: Carollo, 1994.

Wastewater from the project would be conveyed through a new 21- and 24-inch diameter trunk sewer to DSRSD's existing sewer system. The new trunk sewer would be sized to convey the peak wet weather flow generated by the proposed project at buildout; no excess capacity for additional future development would be provided. DSRSD's existing Camp Parks Trunk Sewer would convey the wastewater to the existing DSRSD WWTP near Highway 680 and Stoneridge Road in Pleasanton. There is insufficient capacity in the existing 42-inch diameter Dublin Trunk Sewer north of the treatment plant to accommodate peak flows from the proposed project at buildout in addition to the peak flows generated by all the other development potentially allowed by the general plans for the area served by the trunk sewer (Gresens, 1994). This section of the sewer would have to be replaced with a larger sewer, or a parallel pipeline would have to be installed to convey peak flows to the WWTP. Alternatives for this improvement are currently being studied by DSRSD.

² Linear feet.

³ Manholes spaced every 500 feet.

⁴ Each

⁵ Installed capacity, includes 33 percent standby capacity.

Mitigation Measures

The following mitigation measures are required to reduce the impact to a less-than-significant level.

- 4.9-7(a) Contra Costa County should continue to implement General Plan Policies 3-5, 3-7, 3-9, 7-31 and 7-33 and Implementation Measure 7-t to ensure development occurs in conjunction with the provision of adequate wastewater service.
- 4.9-7(b) The County's conditions of approval should include a requirement that applicants for future entitlements will be responsible for contributing pro rata shares of the costs to construct any new trunk sewers required for DSRSD to convey wastewater from the proposed project site to the DSRSD WWTP.

Wastewater Treatment and Disposal

Impact 4.9-8 Wastewater generated by the proposed project during the non-rainy periods of the winter months could not be exported out of the Tri-Valley through the existing LAVWMA export system.

The plan for the proposed project envisions reclaiming all the wastewater generated by the project to irrigate public landscaped areas within the project during the dry summer months. However, during the wet winter months, there is little need to irrigate landscaping. The excess recycled wastewater generated during these months must either be stored over the winter for use the following summer or be disposed of in some other acceptable manner. Three options were studied in DSRSD's Plan of Services (Carollo, 1994).

Option 1 - Wintertime Storage. The proposed project would require 211 million gallons or 648 acre feet of reservoir capacity at buildout to store excess recycled wastewater over the winter until it can be used for landscape irrigation the following summer. There are few opportunities to construct large open ponds for storing wastewater within the proposed project site because of the hilly terrain. The golf course water hazards could provide only about 10 acre feet of storage. Therefore, either some of the residences or buildings would have to be deleted from the proposed project to provide space for on-site wintertime storage ponds, or nearby sites must be obtained outside the project boundaries for the construction of wintertime storage ponds. Nutrient removal, either through nitrification at the DSRSD's WWTP and/or with additional treatment facilities near the storage ponds, would have to be provided to control the growth of objectionable algae in the ponds.

Option 2 - Put-and-Take. This option involves injecting secondary-treated and filtered wastewater through wells into the groundwater aquifers under the Tassajara Valley during the winter and extracting the water during the summer for landscape irrigation through the same wells or separate extraction wells. Monitoring wells would be installed to ensure the injected water does not migrate to downgradient into groundwater aquifers outside the Tassajara Valley.

DSRSD made an initial preliminary study of the feasibility of the "put-and-take" option. The conclusions of the study were that "it may be possible to provide a very small amount of put and take storage (perhaps . . . 130 acre feet) in formations in the range of 100 to 200 feet below the surface" (Carollo, 1994). The "put-and-take" option is limited by the relative impermeability of the soils. Therefore, this option is not considered viable for disposal of all of the wintertime wastewater flow from the proposed project.

Option 3 - Demineralization and Groundwater Injection. This option, described previously as the Clean Water Revival, consists of installing microfiltration and reverse osmosis treatment processes at the DSRSD WWTP to provide demineralized recycled water low enough in total dissolved solids (i.e., salts) and other contaminants to permit injection into the groundwater aquifers in the Livermore-Amador Valley area. This project would have to comply with requirements of RWQCB Order No. 93-159 governing water reuse in the Livermore-Amador Valley. The Carollo plan concluded that this option, although expensive, is the only viable option for disposal of the wintertime wastewater flows from the proposed project. A system of injection and monitoring wells would also be required to inject the highly treated recycled water into the groundwater aquifers. A plan of this disposal option from the Plan of Services for the Tassajara Valley project is shown on Figure 4.9-8 (Carollo, 1994).

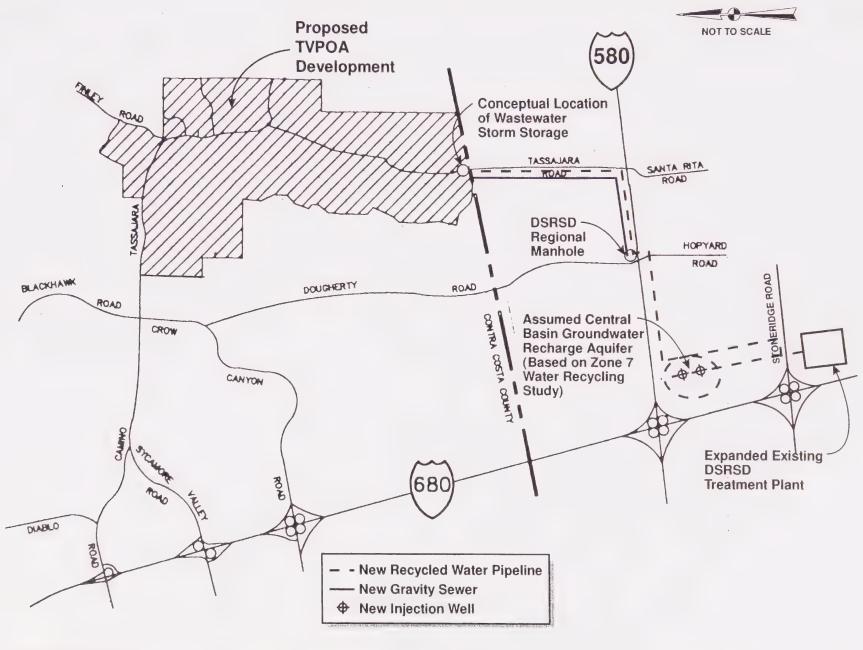
Mitigation Measures

In addition to mitigation measure (a), either (b) or (c) would be required to reduce the impact of wastewater export to a less-than-significant level.

- 4.9-8(a) Contra Costa County should continue to implement General Plan Policies 3-5, 3-7, 3-9, 7-31 and 7-33 and Implementation Measure 7-t to ensure development occurs in conjunction with the provision of adequate wastewater service.
- 4.9-8(b) The County's conditions of approval should include a requirement that the applicants will be responsible for contributing pro rata shares of the costs for DSRSD to develop water recycling facilities including treatment processes and a groundwater injection and monitoring system to permit disposal of wintertime wastewater flows from the proposed project.

or,

4.9-8(c) The applicants should investigate on-site and off-site storage options to be used in conjunction with the "put-and-take" and/or demineralization and groundwater injection options described above to permit disposal of all wintertime wastewater from the proposed project in an environmentally acceptable manner. Additional environmental impact assessments will be required for the selected wintertime wastewater storage and/or disposal plan.



Source: John Carollo Engineers

Figure 4.9-8 Demineralization and Groundwater Aquifer Recharge

Wastewater Service by CCCSD

Impact 4.9-9 Wastewater generated by the project, combined with the cumulative flows from other potential developments within CCCSD service area, would exceed the existing capacity of CCCSD's facilities. Deficiencies would exist in the existing capacities of the Camino Tassajara, San Ramon, and A-line interceptors as well as the WWTP.

The average dry weather wastewater flow generated by the proposed project at buildout using CCCSD's unit generation factors are presented in Table 4.9-8. While there is sufficient existing capacity to serve the Tassajara Valley project, there is insufficient capacity to serve the cumulative flows from all potential projects within CCCSD's service area. CCCSD plans to provide sufficient capacity as development occurs and flow rates increase.

The peak wet weather flow, which is used to determine the capacities of sewers and pump stations, is projected to be 5.6 mgd at buildout of the proposed project. Although CCCSD discourages the use of pump stations in favor of gravity-flow sewers, it is impossible for CCCSD to serve the proposed project entirely with gravity-flow sewers because the major portion of the project site naturally drains south through the Tassajara Valley toward the Contra Costa/Alameda County border. For CCCSD to serve the proposed project, a pump station would have to be constructed at the lowest elevation at the southern end of the project site. The pump station would pump raw sewage north over the watershed boundary to drain by gravity into the existing CCCSD collection system. This pump station could be initially located at the southern end of the first phase of the project, then relocated progressively south to its final location as the phased construction of the project continues. This pump station would be designed in conformance with CCCSD's Pumping Station Design Criteria (CCCSD, 1991).

The majority of the northwestern portion of the proposed project could be served by gravity flow through the interceptor in Camino Tassajara which drains to the west to the existing CCCSD collection system. A small raw sewage pump station would be required along Lawrence Road to convey flows from the Alamo Creek area into the CCCSD gravity-flow collection system. As an alternative, this pump station could be eliminated, and the wastewater could flow by gravity to the proposed Fallen Leaf Pump Station, which may constructed to serve the Dougherty Valley development. Current planning efforts include consideration of two pump stations along Lawrence Road: one to serve the proposed Tassajara Meadows property, and one to serve the gravity flow sewer to be installed parallel to Alamo Creek.

Most likely, all sewers and the pump station force main would be installed within the public streets of the proposed project. If CCCSD serves the proposed project, any sewers located on hillsides and along creek areas would be designed in conformance with CCCSD's Hillside and Creek Areas Sewer Policy (CCCSD, undated).

TABLE 4.9-8
AVERAGE DRY WEATHER WASTEWATER FLOW AT BUILDOUT USING CCCSD PLANNING CRITERIA

Land Use	Dwelling Units	Acres	Wastewater Generation Factor	Average Dry Weather Flow (gpd)
Single Family	3,853	1,363	225 gpd/du	866,900
Multiple Family	1,375	143	150 gpd/du	206,300
Mixed Use				
Multiple Family	722	61	150 gpd/du	108,300
Commercial	ep m	7	1,000 gpd/ac	7,000
Public/Semi Public		271	430 gpd/ac	116,500
Parks and Recreation		401	20 gpd/ac	8,000
TOTALS	5,950	2,2461		1,313,000
Base Wastewater Peaking:	0.2 x 1,313,000		=	262,600
			_	1,575,600
Peak Wet Weather Flow Infiltration	$1,600 \text{ ac}^2 \times 2,515$	gpd/ac	=	4,024,000
Peak Wet Weather Flow				5,599,600

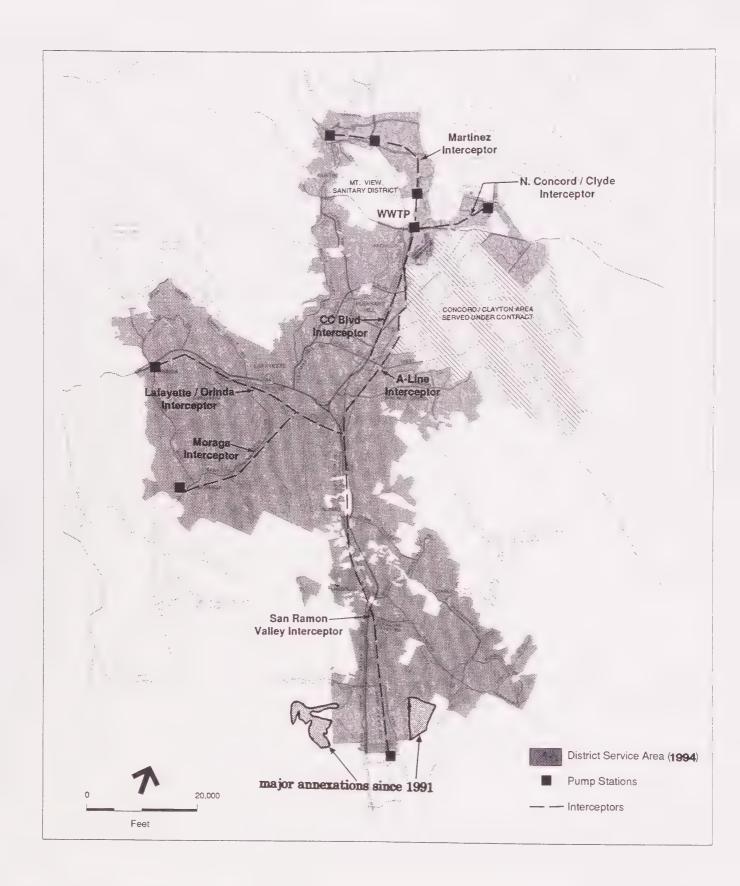
Open space not included in total acreage.

Source: Leavitt, 1994.

The combined capacities of sections of CCCSD's existing Camino Tassajara and A-line interceptors do not have adequate capacity, under CCCSD's design criteria, to serve the potential ultimate development possible under the General Plans for the jurisdictions served by these interceptors. These interceptors are shown on Figure 4.9-9. Proposed improvements to increase the capacities of these interceptors to accommodate projected increases in wastewater flows will be included in revisions to CCCSD's Capital Improvement Plan. Improvements required as a result of new development will be funded from applicable fees and charges paid by developers (Leavitt, 1994).

CCCSD's San Ramon Interceptor passes through San Ramon and Danville. The interceptor was improved in 1991 and has sufficient available capacity to serve the proposed project. The capacity of approximately 9000 feet of the existing Camino Tassajara trunk sewer would have to be increased to serve the proposed project by installing a parallel pipeline (Leavitt, 1994).

² Sewered area.



Source: Environmental Science Associates, Inc., 1991

Figure 4.9-9 CCCSD Service Area and Key Interceptors

If CCCSD serves the proposed project, CCCSD would require that a financing entity be established to pay for operation and maintenance of pump stations, force mains, equalization storage (if any), and access roads to the facilities (Leavitt, 1993).

The present capacity of the CCCSD WWTP is insufficient to accommodate flows from the Tassajara Valley project as well as all the potential development projects allowed by the general plans of Contra Costa County and the cities within CCCSD's service area. CCCSD has a program in place to expand its WWTP capacity to serve the needs for planned development within its service area. A 15 mgd expansion of the WWTP average dry weather flow capacity is planned during the next decade. Projects to expand the capacities of the headworks, preliminary treatment, primary treatment, primary effluent pumping, secondary treatment, disinfection, and final effluent pumping are planned.

Augmentation of the solids processing facilities would also be required in approximate proportion to the increase in average dry weather flow. CCCSD currently incinerates sewage sludge to produce heat. CCCSD operates one incinerator full-time; a second incinerator is reserved as a backup unit. Additional flows could require operation of both incinerators. A sludge lime stabilization process has been installed, and CCCSD has completed studies on alternatives such as thermal/mechanical sludge drying to meet future needs. New solids processing facilities would be added incrementally as needed.

CCCSD's policy is to provide adequate wastewater system capacity to serve projects that comply with the general plans of Contra Costa County and the cities with CCCSD's service area. This expanded capacity will be available for projects approved by land-use planning jurisdictions either within CCCSD's existing service area or by annexation to CCCSD on a first come-first serve basis. Financing for the expansion projects will come from the facilities capacity fees paid to CCCSD by developers upon connection of new developments to CCCSD's sewer system, and from a portion of the CCCSD sewer service charge assessed to new residents (Leavitt, 1994).

Mitigation Measures

The following mitigation measures are required to reduce the impact to a less-than-significant level.

- 4.9-9(a) Contra Costa County should continue to implement General Plan Policies 3-5, 3-7, 3-9, 7-31 and 7-33 and Implementation Measure 7-t to ensure development occurs in conjunction with the provision of adequate wastewater service.
- 4.9-9(b) If wastewater service is provided by CCCSD, the County should include a requirement that the applicants will be responsible for contributing their pro rata share of the costs for capacity-expansion projects for certain elements of CCCSD's wastewater collection, treatment, and disposal system.

Wastewater Collection By DSRSD With Treatment and Disposal By CCCSD

Impact 4.9-10 New facilities would be required by DSRSD and capacities of some CCCSD facilities would be exceeded.

Another possible option is for DSRSD to annex the project site, collect wastewater from the proposed project and pump the untreated wastewater north to the CCCSD collection system for conveyance to the CCCSD WWTP for treatment and disposal. This option is similar in concept to the pipeline project proposed by the Tri-Valley Wastewater Authority to transport raw wastewater to CCCSD for treatment and disposal, although smaller in scale. DSRSD would construct a raw sewage pump station and force main to convey untreated wastewater from the southern end of the proposed project site north to CCCSD's San Ramon Interceptor. The quantity of wastewater transported would the net amount that is not used on the project site as recycled water. Unless seasonal storage is provided for the recycled wastewater, all the wintertime flows would be transported north to CCCSD.

Mitigation Measure

4.9-10 If wastewater service is collected by DSRSD and transported to CCCSD for treatment and disposal, the County should require that the applicants will be responsible for contributing their pro rata shares of the costs for new DSRSD facilities to collect and transport wastewater generated by the project, as well as capacity-expansion projects for certain elements of CCCSD's wastewater collection, treatment, and disposal system.

Wastewater Service by Both DSRSD and CCCSD

Impact 4.9-11 Wastewater treatment by both sanitary districts would create a demand on existing facilities.

Another possible option is for DSRSD and CCCSD to each serve the portion of the proposed project which naturally drains towards the existing facilities of each district. The major portion of the project site naturally drains south toward the DSRSD collection system and WWTP in Alameda County as previously described in the Setting section above. A smaller portion in the northwest section of the project naturally drains to the west toward the CCCSD collection system as previously described above. Gravity sewers would be installed to convey flows to the existing collection systems of the two districts. A small pump station may be required along Lawrence Road. The two portions of the project would have to be separately annexed to each district and approved by LAFCO and the Board of Directors of each district. While the amount of wastewater conveyed to DSRSD would be reduced by approximately one-third, similar treatment and conveyance problems associated with servicing the entire project would remain.

Mitigation Measure

4.9-11

If wastewater service is provided by both DSRSD and CCCSD, the County's conditions of approval should include a requirement that the applicants will be responsible for contributing pro rata shares of the costs for capacity-expansion projects for certain elements of both DSRSD's and CCCSD's wastewater collection, treatment, and disposal systems required to serve those portions of the proposed project that would be annexed to each district.

Construction of a Satellite WWTP

Impact 4.9-12 Construction of an on-site satellite WWTP to serve the project could create land use conflicts.

Another option for wastewater treatment and disposal is for the applicants to construct a satellite WWTP at the project site solely to serve the TVPOA development. Under this option, the treated effluent would be recycled for direct landscape irrigation during the dry summer months and injected into the groundwater aquifers following demineralization with reverse osmosis during the wet winter months. For unrestricted landscape irrigation of parks and playgrounds, the satellite WWTP would have to include disinfection, oxidation, chemical coagulation, clarification, and filtration treatment processes. Sludge produced during treatment would probably be exported by a dedication pipeline to the existing DSRSD or CCCSD collection system for conveyance to the DSRSD or CCCSD WWTP for processing and disposal. A package plant that includes the necessary treatment processes could be purchased and assembled at the selected treatment plant site, or a WWTP could be designed and constructed specifically for the proposed project.

A satellite WWTP would most likely be located at the extreme southern end of the proposed project site near the Contra Costa/Alameda county border to take advantage of a collection system that maximizes gravity flow. A satellite WWTP would require a site that is currently planned for other uses. Most likely, low or medium density single-family residential housing sites would be converted to public use for the WWTP. Depending on the amount of buffer space provided around the satellite WWTP, visual, odor and noise impacts could be a concern. Chemicals used in treating the wastewater would be delivered periodically, and operating and maintenance personnel would visit the WWTP daily. Energy would be consumed in the operation of pumps, other mechanical equipment, and lights.

The satellite WWTP could be operated and maintained by either DSRSD or CCCSD under contract with an association of Tassajara Valley homeowners, or a new sanitation district could be formed under the California law. Construction of a satellite plant would require the approval of, and a NPDES permit from, the RWQCB. A satellite WWTP would not conform to RWQCB Policy 78-14, which discourages on-site sewerage facilities. In the past, the RWQCB has resisted construction of satellite plants because the practice could lead to a proliferation of many small treatment plants which would be more difficult to properly operate, maintain, and monitor than a few larger regional treatment plants. In addition, the establishment of a new sanitation district would also require the approval of LAFCO.

The option of a satellite plant was evaluated in the Plan of Services for the Tassajara Valley project and was dismissed as not being cost-effective given the presence of DSRSD's existing WWTP with space available for expansion (Carollo, 1994).

Mitigation Measures

All of the following mitigation measures are required to reduce the impact to a less-than-significant level. If a satellite WWTP is selected to serve the proposed project:

- 4.9-12(a) The applicant should comply with Section 916-4.002, Sewerage Requirements, of the Contra Costa County Subdivision Ordinance and elements of the County General Plan.
- 4.9-12(b) The applicants for future developments should pay for the construction costs of a satellite WWTP and appurtenant pipelines, effluent injection wells, etc.
- 4.9-12(c) TVPOA should annex to or contract with the DSRSD or CCCSD to provide operation and maintenance services for a satellite WWTP as a condition of Final Development Plan or subdivision map approval.
- 4.9-12(d) The development standards should include the following criteria for constructing a satellite WWTP:
 - All necessary approvals and permits, including a NPDES permit, to build and operate the satellite WWTP shall be obtained. Sludge should be discharged through a sewer or dedicated pipeline to the DSRSD or the CCCSD WWTP.
 - A qualified, registered civil/sanitary engineer shall design the satellite WWTP to reliably and consistently achieve waste discharge requirements imposed by the RWQCB. Consistent with achieving waste discharge requirements, the WWTP should be designed to minimize the consumption of energy and chemicals, the generation of odors, and the presence of noise. Sodium hypochlorite should be used for disinfection (unless a better process or chemical is developed in the future).
 - An architect should be retained to provide attractive architectural designs, features, and landscaping at the satellite WWTP.

Impact 4.9-13 Providing wastewater and reclaimed water services to the Tassajara Valley project may be inconsistent with the *General Plan*.

Similar inconsistencies to General Plan policies occur with wastewater/recycled water service as were discussed above for water service. Policies 3-8 and 7-31 encourage urban development to occur within

the Spheres of Influence of the sewerage service agencies established by LAFCO. Policy 7-31 goes on to state that service should only be extended where the development can meet growth management standards included in the *General Plan*. As discussed above, several options have been studied to determine the most effective method of wastewater treatment and wintertime disposal without burdening DSRSD facilities, but neither the applicant nor DSRSD have yet determined the best solution for wastewater collection, treatment, and disposal. Demineralization, using the reverse osmosis process, followed by groundwater injection, the preferred option for wintertime disposal, would require approval by the RWQCB. CCCSD can serve the project, although expansion of conveyance pipelines and treatment facilities will be needed to accommodate this project and the cumulative development planned within the District's service area.

Policy 7-33 states that at the project approval stage, new development shall demonstrate that wastewater treatment capacity can be provided. Several policies call for the use of recycled water and incorporating water conservation measures to reduce flows into the sanitary system. The applicant is proposing to use recycled water for the golf course, public landscaping in roadways, parks and commercial areas. The County's standard conditions of approval require the use of water conserving appliances.

Mitigation Measures

The following mitigation measures are required to reduce the impact to a less-than-significant level.

- 4.9-13(a) The applicant and DSRSD or CCCSD should demonstrate to the County that adequate wastewater treatment capacity can be provided through buildout prior to approval of the Preliminary Development Plan.
- 4.9-13(b) The applicant should revise the Public Facilities Implementation Plan to include the total costs for wastewater collection, treatment and disposal, as well as the recycled water supply, prior to approval of the Preliminary Development Plan.

RECYCLED WATER

Setting

The use of recycled water (i.e., wastewater that has been properly treated to be safe for reuse for nonpotable purposes) can reduce the demand for potable water. The State Department of Health Services (DOHS) has established standards for the use of recycled water in the California Code of Regulations, Title 22, Sections 60301 through 60357 (known as "Title 22"). Title 22 establishes requirements for treatment processes, redundant process units, power supplies, alarms, and quality sampling and analysis for various uses of the recycled water. Requirements for recycled water used for irrigation of parks, playgrounds, and schoolyards are more stringent than those for irrigation of golf courses and highway landscaping where public exposure to the recycled water is not as great. For

irrigation of parks, playgrounds, and schoolyards, recycled water must be adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The wastewater is considered adequately disinfected for protection of public health when the most probable number of coliform organisms does not exceed 2.2 per 100 milliliters of wastewater. Coliforms are indicator organisms for other pathogens present in human wastes.

Not withstanding these stringent treatment requirements, care should be taken in the use of recycled water to minimize direct contact with people. Direct contact can be reduced by irrigating in the early morning hours, posting signs warning people that recycled water is being used, and using irrigation practices that prohibit runoff from the irrigated areas. DOHS does not approve of directly using recycled water for drinking, food preparation, or other household uses. Recycled water has been used to flush toilets in office buildings (particularly in the Irvine Ranch Water District), and several recent developments have dual water distribution systems, one for potable water and one for recycled water.

In California, the treatment, distribution, and sale of recycled water requires a cooperative effort between a water purveyor and a wastewater treatment agency. Since the proposed project site is presently outside the service area boundaries of all water purveyors and wastewater treatment agencies, the supply of recycled water will depend on which agencies are selected through the actions of LAFCO to serve the proposed Tassajara Valley project with water supply and wastewater collection, treatment, and disposal services. If DSRSD is selected to provide both potable water and wastewater services, DSRSD can act alone to provide recycled water. Any other combination of EBMUD, CCCSD, and DSRSD working together would require a cooperative agreement to serve the proposed project. DSRSD and EBMUD have entered into a joint powers authority known as the DSRSD/EBMUD Recycled Water Authority (DERWA). DERWA is planning for recycled water use in the San Ramon Valley. DERWA's potential service areas are described in a facilities plan and EIR which have been prepared and certified by DERWA. The plan approved by the DERWA Board of Directors is to serve existing customers and proposed developments that have been through the land use planning process which are within or adjacent to the DSRSD and EBMUD service areas. Therefore, at the present time, DERWA has decided not to serve the Tassajara Valley project with recycled water (Contra Costa Times, 1996). However, if the proposed Tassajara Valley project is approved, DERWA may change its plans and serve the project with recycled water.

DSRSD

DSRSD currently recycles between 0.2 and 0.4 mgd of secondary effluent for irrigation of highway landscaping near the intersection of Highway 680 and Stoneridge Drive. DSRSD is planning to rehabilitate the existing filters and improve the hypochlorite disinfection system at its WWTP to provide recycled water for unrestricted landscape irrigation of golf courses, parks, playgrounds, and greenbelts. The filters have not been used since DSRSD discontinued discharging treated effluent to Alameda Creek when the LAVWMA export pipeline was put into operation in 1980. The filters will be rehabilitated in phases; rehabilitation of one of the three existing filters during the first phase will result in a recycled water capacity of 5.2 mgd. This capacity will be more than required to supply the proposed Tassajara Valley project. DSRSD has recently completed a Recycled Water Distribution Master Plan

which addresses the needs for transporting and storing recycled water for use within DSRSD's service area. The Plan of Services (Carollo, 1994) identified the location of recycled water lines, pump stations, and reservoirs within the Tassajara Valley project site.

CCCSD

CCCSD currently recycles approximately 2 mgd for landscape irrigation within the CCCSD WWTP and the nearby vicinity. CCCSD's recycled water distribution system is being extended into Pleasant Hill and the Lamorinda area, and CCCSD has purchased an unused Shell Oil Company pipeline extending southwest from Martinez for possible future recycled water distribution. However, the Tassajara Valley development is considered too far away from CCCSD recycled water facilities for CCCSD to serve the proposed project with recycled water.

Impacts and Mitigation Measures

Significance Criteria

The proposed project would generate significant sewage treatment and collection service impacts if it would (1) cause a substantial increase in demand for service above that for which the service agency has planned; (2) cause a substantial decrease in the quality or level of service such that County General Plan performance standards may not be met; (3) is inconsistent with County General Plan; or (4) requires the extension of a public utility to an area not currently planned for service.

All impacts are considered significant unless stated otherwise. The mitigation measures identified would reduce the impact to a less-than-significant level unless otherwise stated.

Recycled Water Demand

Impact 4.9-14 The proposed project would include a recycled water system, thereby decreasing the demand for potable water. This is considered a beneficial impact.

The Plan of Services for the proposed project (Carollo, 1994) indicates that an average of 1.09 mgd of recycled water can be used for landscape irrigation of the golf course, parks, roadway medians, green bands adjacent to roadways and buildings within open space areas, and some common grounds within multi-family housing and mixed use areas during the dry months of the year. Recycled water will provide for 39 percent of the total landscape irrigation requirements at buildout. The projected average recycled water irrigation requirements at buildout are summarized in Table 4.9-9.

The proposed project will be built in phases. Phase 1 will be completed in the year 2006, and Phases 2,3, and 4 will all be built between 2007 and 2015. The majority of Phase 2 to completed in 2012, while the remaining phases will be completed by 2015. Table 4.9-10 shows the projected average potable water demand in the years 2006, 2012, and at project buildout in 2015.

TABLE 4.9-9
AVERAGE RECYCLED WATER IRRIGATION REQUIREMENTS AT BUILDOUT
USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Description	Acres	Total Irrigation Water Use (gpd)	Fraction Met With Recycled Water (%)	Recycled Water Irrigation ¹ (gpd)
sv	Single-Family - Very Low	383	290,700	0	0
SL	Single-Family - Low	134	169,500	0	0
SM	Single-Family - Medium	667	912,500	0	0
SH	Single-Family - High	179	144,600	0	0
ML	Multi-Family - Low	71	71,700	0	0
MM	Multi-Family - Medium	72	58,200	80	46,600
MU	Mixed Use	68	34,300	90	30,900
PS	Public/Semi-Public	271	240,600	70	168,400
PR	Parks and Recreation	401	558,600	100	558,600
os	Open Space	2,245	284,000	100	284,000
Total		4,491	2,764,700	40	1,088,500

¹ Estimated average daily use.

Source: Carollo, 1994. Adjusted to reflect revised Preliminary Development Plan.

TABLE 4.9-10
AVERAGE RECYCLED WATER IRRIGATION REQUIREMENTS BY YEAR
USING DSRSD PLANNING CRITERIA

	Percent of Dwelling Units Built						
Year	Phase 1	Phase 2	Phase 3	Phase 4	Water Irrigation (gpd)		
2006	100	0	0	0	446,300		
2012	100	94	24	73	750,600		
2015	100	100	100	100	1,088,500		

Source: Mills Associates, 1996.

Mitigation Measure

4.9-14 No mitigation measure is necessary or recommended.

Recycled Water Distribution System

Impact 4.9-15 Irrigation with recycled water creates a limited health risk if humans inadvertently digest the water.

Recycled water used at the proposed project site for landscape irrigation will be properly treated and disinfected at the wastewater treatment plant to protect public health in conformance with Title 22 and the waste discharge permit from the RWQCB. Nevertheless, there is a limited health risk if recycled water is inadvertently ingested by people. Therefore, proper irrigation practices must be used to minimize potential public contact with recycled water as a further means of protecting public health.

Mitigation Measure

- 4.9-15 The development standards should include a requirement that the applicant install and operate a recycled water distribution system in a manner which will minimize potential public contact with recycled water. The following practices should be implemented in the recycled water distribution system:
 - Install automatic irrigation systems to restrict irrigation to the early morning hours when few people are outside.
 - Post signs in areas of recycled water use warning people not to drink or come in contact with the recycled water.
 - Grade areas irrigated with recycled water to eliminate runoff in dry weather.
 - Prohibit use of recycled water at private residences and other areas which are not professionally managed where people might inadvertently drink the water from a garden hose or otherwise come in close contact with the recycled water.
 - Provide recycled water irrigation system features or operational restrictions required by the Contra Costa County Department of Public Health Services.

Impact 4.9-16 Installation of the recycled water distribution facilities may create excessive noise and visibility problems for residents of the proposed project.

Since the Tassajara Valley is presently undeveloped, there is no existing recycled water distribution system in the area. A preliminary recycled water distribution plan is shown on Figure 4.9-10. The distribution system includes three pressure zones that serve the same elevation bands as the upper three DSRSD potable water pressure zones. Since the reliability of the recycled water system is not as critical to public safety as the potable water system (potable water is used for fire-fighting because fire-fighters come in direct contact with the water), one local distribution storage tank would be constructed to serve each zone. Water would be pumped from the lower to the higher zones through separate recycled water pump stations. A summary of the components of the recycled water distribution system is presented in Table 4.9-11 (Carollo, 1994).

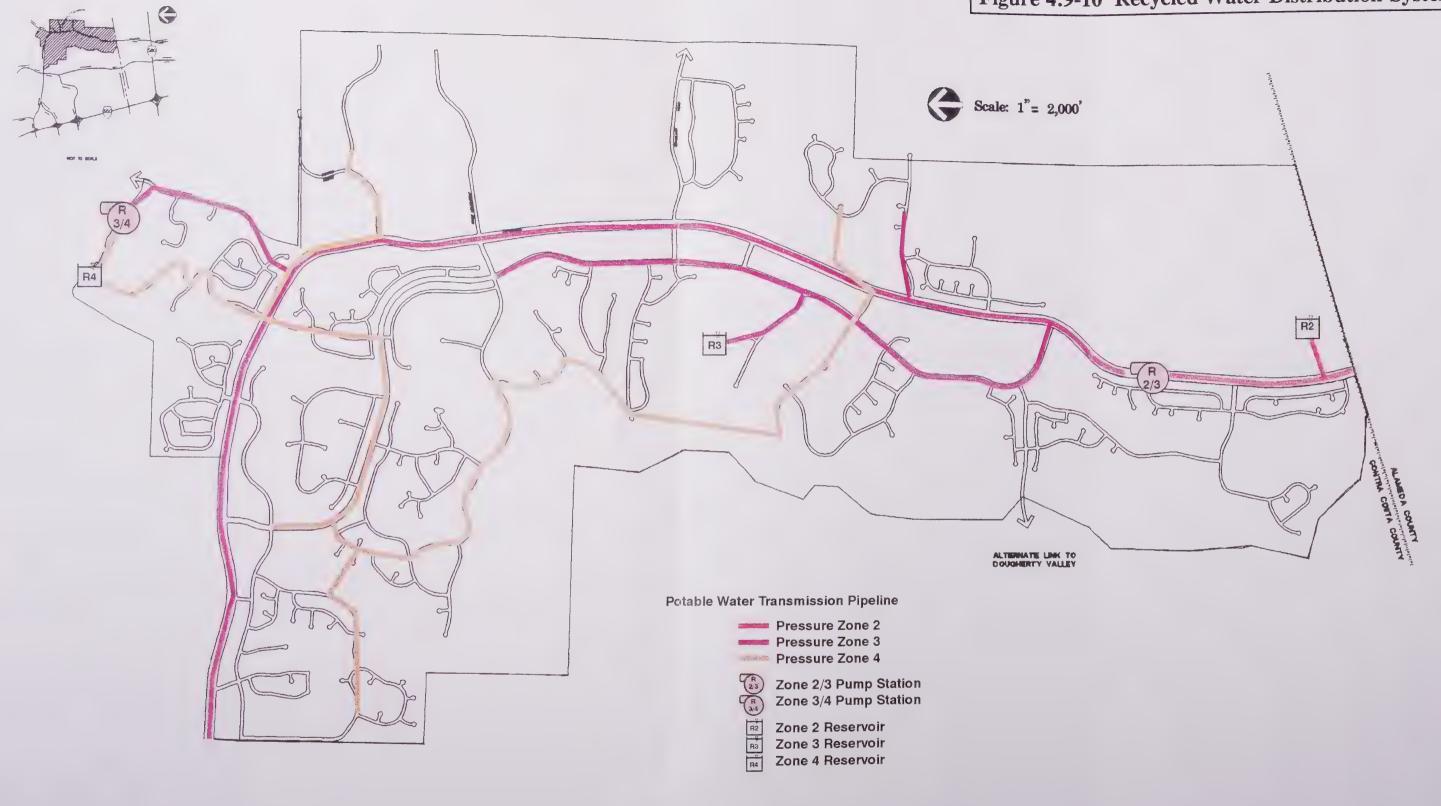
Welded steel tanks would be constructed on hillsides approximately 100 feet higher in elevation than the upper boundary of the pressure zone the tanks serve. The tanks would be constructed on pads cut into hillsides and not on the tops of the hills. The pumps used to lift the water to the higher pressure zones would be powered by electric motors which produce noise when they operate. The noise level of typical booster pumps and motors is about 80 to 90 dB when standing next to the motors. With proper design of the building housing the pumps, the noise levels can be reduced to 60 dB at the property lines.

Mitigation Measures

All of the following mitigation measures are required to reduce the impact to a less-than-significant level.

- 4.9-16(a) Placement of recycled water storage tanks should follow the techniques detailed in the applicant's Design Guidelines. The following mitigation measures should be added to those listed in the Design Guidelines:
 - Tanks should be located in ravines or on the back sides of hills to reduce direct visibility from both on and off the project site. Grading for the tank pad and service road should be rounded to simulate a rolling hillside.
 - Tanks should be painted in a color that blends with the natural hillsides in summer.
 - All graded areas should be revegetated with a planting mix similar to existing landscape.

Figure 4.9-10 Recycled Water Distribution System



- Notes: 1. Pipeline alignments and reservoir and pump station locations are approximate.
 - 2. This figure was based on a preliminary development plan, but it is basically consistent with the present development plan.

TABLE 4.9-11 COMPONENTS OF RECYCLED WATER DISTRIBUTION SYSTEM

		Amount for Each Phase			Total
Description	Units	1	2	3 ¹	for Buildout
Recycled Water Mains					
10" diameter	LF^1	6,200		5,200	11,400
12" diameter	LF	3,900	700		4,600
14" diameter	LF	1,600	10,000		11,600
16" diameter	LF	13,000	2,600		15,600
18" diameter	LF	3,700	***		3,700
20" diameter	LF	3,000	***	***	3,000
24" diameter	LF	23,100			23,100
30" diameter	LF	8,300		min raw for	8,300
36" diameter	LF	13,600	M-Street	espression face	13,600
Total		76,400	13,300	5,200	94,900
Pump Station					
Zone 2/3	EA^2	1	CO Standa		1
15.3 mgd					
Zone 3/4	EA	1			1
4.5 mgd					
Reservoirs					
Zone 2	EA			1	1
58,000 gallons					
Zone 3	EA	1			1
773,000 gallons					
Zone 4	EA	1			1
327,000 gallons					

¹ Linear feet.

Source: Carollo, 1994.

² Each.

- A mix of 5-gallon and 15-gallon size, drought-tolerant native trees, such as bay, laurel, live oak, toyon, or buckeye, should be included in the landscaping plan. Trees and shrubs should be planted in clusters to reflect the natural vegetative conditions, rather than in a single line encircling the tank. Faster growing and taller trees should be placed upslope and closer to the tank.
- Irrigation should be provided for a minimum of five years to achieve faster growth and optimize screening within the shortest possible time.
- Landscaping should be monitored for five years, and unhealthy trees should be replaced as soon as possible.
- 4.9-16(b) Refer to mitigation measure 4.8-8(a).
- 4.9-16(c) The precise locations of recycled water storage tanks and pump stations should be identified on the Final Development Plan. The precise locations, site preparation, and landscaping should be consistent with the applicant's Design Guidelines and other zoning standards.
- 4.9-16(d) Adequate noise attenuation features should be included in the design of the pump stations to reduce noise levels to 60 dB outside the pump stations.

SOLID WASTE

Setting

Existing households in the TVPOA project area are served by Valley Waste Management, Inc. (Heibel, 1994). This private solid waste collection firm has transitional permits to serve rural areas in the County. Solid waste generated by the valley households is hauled to the Altamont Landfill. It is unknown at this time whether Valley Waste Management, Inc. would serve the new development. Contra Costa County issues the franchise for solid waste collection in the unincorporated areas and the County may use the bidding process to select a solid waste collection firm (Aiello, 1994).

Costa Sanitary Landfill in Richmond. Solid waste haulers, such as Valley Waste Management, contract with the Alameda County Solid Waste Authority to export solid waste to the Altamont Landfill. The Keller Landfill is the primary repository of solid waste for central and east county households. The Keller Landfill has an approximate 50-year life capacity, based upon receiving 2,000 tons per day. The landfill was receiving 1,400 tons per day, but that level decreased to approximately 800 tons per day when solid waste was transferred to the Altamont Landfill. After March 1996, the solid waste will again be deposited at the Keller Landfill (Zahn, 1996). The transfer of solid waste to Altamont, as well as recycling efforts, has helped to extend the life of the Keller Landfill. The life of the landfill will continue to be extended if the daily tonnage rate continues to be less than what was projected (Aiello, 1994).

Solid waste received at the Altamont Landfill between 1989 and 1995 has averaged 1,688,484 tons per year. Present capacity at this landfill is 18.9 million tons with an expected closure in the year 2005. Expansion of the landfill has been proposed to enlarge its capacity by 196 million tons; extending its life to 2046. Expansion approval and issuance of permits has not occurred, but is anticipated sometime in 1996. Whether the application for the entire expansion is approved is unknown at this time (Clark, 1996).

Contra Costa County is the only county in California to have an approved integrated waste management plan (IWMP). The County operates a curbside recycling program and recently began a backyard composting program whereby yard waste is diverted from the landfill to be used for mulch/fertilizer. The recycling program is operated by the private solid waste collection firms. Valley Waste Management provides both curbside recycling service and automated yardwaste pickup. The company provides each household with a 64-gallon container to be used solely for yardwaste. This is picked up weekly at no additional charge. The yardwaste is composted or mulched (Heibel, 1994).

Impacts and Mitigation Measures

Significance Criteria

The proposed project would generate significant impacts on solid waste services if it would cause a substantial increase in demand for service above that which the service agency has planned, or is inconsistent with the County *General Plan*.

Unless otherwise noted, all impacts are considered significant. Mitigations measures, unless otherwise noted, are required to reduce the impact to less-than-significant.

Impact 4.9-17 Solid waste generated by the Tassajara development would contribute to the reduction in landfill capacity. This is a less-than-significant impact.

Buildout of the TVPOA project area would increase solid waste generation by approximately 8,942 tons per year. Residential land uses in the project area are estimated to generate approximately 8,402 tons per year based upon a generation rate of .58 ton per year per person times 14,487 persons. Commercial land uses would generate approximately 540 tons per year using a generation rate of .18 ton per year per 100 square feet (3,000 square feet) (Dougherty, 1992).

The solid waste generated by the Tassajara development would contribute to the reduction in capacity at either landfill. The project's daily contribution of solid waste at the Keller and Altamont landfills would represent a 1.75 percent and .53 percent increase, respectively. Although the Tassajara development was not planned for in the overall solid waste management plans of either agency, nonetheless the project's contribution is not considered a significant impact on existing landfill capacity. Both landfills can accommodate the proposed development.

Mitigation Measure

4.9-17 No mitigation measure is necessary or recommended.

The following recommendation should be considered as a condition of project approval:

• The Design Guidelines should include criteria for the design of collection facilities at commercial facilities in concurrence with the designated solid waste collection company and the County Department of Health.

GAS AND ELECTRICITY

Setting

Pacific Gas and Electric Company (PG&E) would provide gas and electrical service to the proposed development. The project site is divided between two divisions of PG&E; the Diablo and Mission Divisions. Diablo Division is responsible for providing gas and electrical service to residents fronting Tassajara Road, south to Bruce Drive. The Mission Division is responsible for service from Bruce Drive south to the County line. Residents within the Tassajara planning area currently obtain only electricity from PG&E. An 8-inch gas line located in the Tassajara Road right-of-way dead-ends at the Blackhawk eastern property line. Residents obtain their electricity through the overhead electrical lines extending along Tassajara Road. Electrical power is supplied by the Tassajara substation located near Crow Canyon Road (Ryan, 1994).

Impacts and Mitigation Measures

Significance Criteria

The proposed project would generate significant impacts on gas, electric, telephone and cable services if it would cause a substantial increase in demand for service above that which the utility has planned, or is inconsistent with the County General Plan. Unless otherwise noted, all impacts are considered significant. Mitigations measures, unless otherwise noted, are required to reduce the impact to less-than-significant.

Impact 4.9-18 Buildout of the Tassajara project area would increase the demand for gas and electrical service. This is considered a less-than-significant impact.

Based upon average appliance energy consumption (California Energy Commission, 1992), the average residential energy usage is 633 kilowatt (kWh) of electricity and 51 therms of gas per month. Applying these amounts to the residential portion of the project, the monthly demand would be approximately 3,766,350 kWh and 303,450 therms. Discussions with representatives of Pacific Gas and Electric

Company indicate that the utility has adequate power and gas to supply the project area at buildout. Electrical power would be provided from the Tassajara and San Ramon substations, both of which have ample capacity. The existing 8-inch gas line would be extended to serve the project area (Ryan, 1994). Furthermore, Title 24 of the California Code of Regulations requires energy efficient building design and materials. Subsequent projects must conform with Title 24 requirements prior to issuance of building permits. These requirements will help to reduce the demand on energy consumption generated by the proposed development. Although this impact is considered less than significant, other measures to reduce energy consumption in the home could be considered, such as encouraging solar energy particularly to heat swimming pools, and the use of fluorescent fixtures.

Mitigation Measure

4.9-18 No mitigation measure is necessary or recommended.

COMMUNICATIONS SERVICES

Telephone

Pacific Bell provides telephone service to the Tassajara Valley from existing facilities in Danville.

Cable Television

There are three cable companies operating in the project area. ViaCom, Inc., provides cable television service to the San Ramon area, including Camp Parks and other areas west of Dougherty Road (Gouveia, 1994). Ponderosa Cable and TCI Cablevision serve the Danville and Blackhawk areas. TCI Cablevision currently has cable that runs along Camino Tassajara as far east as Finley Road (Tisdale, 1994). Service may also be provided by a company formed specifically to serve the project.

Impact and Mitigation Measures

Impact 4.9-19 Telephone service would need to be expanded to serve the development. This is a less-than-significant impact.

Implementation of the project would increase demand for telephone service. Pacific Bell estimates that the planning area could be served from existing facilities combined with on-site improvements. Fiber optic service is currently being planned for the area. This impact is considered less than significant because Pacific Bell does not anticipate problems extending service to the planning area and because it would recover costs of providing telephone facilities through developer and user fees (Smith, 1994).

Mitigation Measure

4.9-19 No mitigation measure is necessary or recommended.

Impact 4.9-20 Cable television service would need to be extended throughout the project site.

This is a less-than-significant impact.

Implementation of the project would increase demand for cable television service. Cable companies anticipate they will be able to extend service to the planning area without difficulty. The above identified companies, or possibly a combination of these companies, would serve the planning area. This impact is considered less than significant because ViaCom, Inc., or another cable television company would be able to provide service to the planning area and because the cable company would finance the cost of providing service with user fees.

Mitigation Measure

4.9-20 No mitigation measure is necessary or recommended.

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4.10 PUBLIC SERVICES

INTRODUCTION

This section examines the impacts of the proposed project on law enforcement, fire protection, park and recreation services, schools, the community college district and childcare services.

LAW ENFORCEMENT

Setting

Contra Costa County Sheriff's Department (CCCSD)

Law enforcement in the Tassajara Valley planning area is provided by the Contra Costa County Sheriff's Department (CCCSD) and the California Highway Patrol (CHP). The sheriff's department provides non-traffic related law enforcement services throughout the unincorporated areas of Contra Costa County, as well as providing contract services to cities such as Lafayette, Orinda and San Ramon. Other programs operated by the Sheriff's Department include, but not limited to: crime prevention, babysitting seminars, residential and commercial security checks and DARE, the drug abuse resistance education program for elementary school children (Snell and Ryan, 1994).

The project site is located within Beat 13, a one-person beat, operating 24 hours per day. This beat encompasses 78 square miles, extending from Walnut Creek to the Contra Costa/Alameda County line and from the Tassajara Hills to Mt. Diablo. The nearest sheriff's substation is located at 160 Alamo Plaza, approximately 11 miles from the center of the project site. Known as the Valley Substation, it provides service to central Contra Costa County, including the unincorporated areas of Martinez, Concord, Walnut Creek, Lafayette, Alamo, Pittsburg, Clayton and the Tassajara Valley and is responsible for five beats. Response time for "priority one" calls is approximately 10 to 15 minutes, depending upon the location of the patrol car at the time the crime was reported (Snell and Ryan, 1994). This response time does not meet the *General Plan* standard of five minutes for 90 percent of priority one and two calls.

Funding for the Sheriff's Department comes from the County general fund. There have been no new officers hired since 1980. The department currently maintains 1.0 sworn officer per 1,000 population. although this number also includes investigators. The patrol division accounts for 0.6 or 0.7 officer per 1,000 population. When the officer to population ratio drops below 1 per 1000, effective law enforcement cannot be provided by the department (Snell and Ryan, 1994). While the number of residential burglaries is down, the Sheriff's Department is seeing an increase in volent crime (Snell and Ryan, 1994).

Special assessment districts have been established in Alamo and Blackhawk to provide additional law enforcement services beyond what is provided through the general fund. This includes traffic-related law enforcement as well as all other police services. The assessment districts have dedicated deputies who patrol only the area within the taxation district.

The County recently decided to use this funding mechanism on a countywide basis to reduce the burden on the Sheriff's Department created by new development. All new development occurring in the unincorporated areas of the County is now conditioned on annexation into the countywide P-6 police service district. It should be noted that this district provides funding only for non-traffic-related law enforcement service (County, 1994).

California Highway Patrol (CHP)

The CHP is responsible for the enforcement of traffic-related offenses in the County's unincorporated areas. The nearest CHP office responding to calls in this part of the County would be in Dublin. This office's area of responsibility includes the southern half of Contra Costa County and the northern third of Alameda County.

Due to staffing level restrictions, the Dublin office has only 30 patrol officers available to patrol freeways and county roadways. Because of this staffing restriction the officers almost exclusively patrol only the freeways. In the unincorporated areas they are currently limited to responding to traffic accidents and repeat violations of traffic laws that have been reported by local residents (County, 1994).

Relevant General Plan Policies

The following goals and policies taken from the Public Facilities/Services Element of the *Contra Costa County General Plan* (1996) are relevant to the provision of police services to the Tassajara Valley planning area.

Goals

7-B	To permit development in unincorporated areas only when financing mechanisms are in place or committed which assure that adopted performance standards in the growth management program will be met.
7-V	To provide a high standard of police protection services for all citizens and properties through Contra Costa County.
7-W	To incorporate police protection standards and requirements into the land use planning process.
7-X	To encourage public participation in crime prevention activities.

Policies

- 7-57 A sheriff facility standard of 155 square feet of station area per 1,000 population shall be maintained within the unincorporated area of the County.
- 7-59 A maximum response time goal for priority 1 or 2 calls of five minutes for 90 percent of all emergency responses in central business district, urban and suburban areas, shall be strived for by the sheriff when making staffing and beat configuration decisions.
- 7-60 Levels of service above the county-wide standard requested by unincorporated communities shall be provided through the creation of a County Service Area or other special governmental unit.

Implementation Measures

7-aq In developing areas the Sheriff protection service standard shall be achieved by creation of a County Service Area and special tax and/or creation of a Mello-Roos Community Facilities District that generates special tax revenue to support additional increments of Sheriff patrol necessary to meet the adopted service standard. Developers, prior to receiving development approvals, should agree (via a Development Agreement or a landowner election) to participate in such special funding districts.

Impacts and Mitigation Measures

Significance Criteria

Impacts are considered to be significant if the project: 1) causes a substantial increase or demand on the County Sheriff's Department, or 2) causes a substantial decrease in the quality or level of law enforcement service to the point that the County General Plan performance standards are not met or, 3) is not consistent with the County General Plan.

All impacts are considered significant adverse impacts unless identified otherwise. The corresponding mitigation measure(s), unless otherwise noted, would be sufficient to reduce impacts to a less-than-significant level. Although not required by CEQA, some less-than-significant impacts have been discussed because they are issues of local concern. While no mitigation measures are required by CEQA for less-than-significant impacts, in some cases recommendations are proposed that could be considered by staff as conditions of project approval.

Impact 4.10-1 The proposed Tassajara development would require additional law enforcement officers, equipment and facilities.

Implementation of the development plan would increase the need for law enforcement, equipment and facilities. Based upon the Sheriff's Department standard of one patrol officer per 1,000 population and 1.5 cars for every five officers, the projected population of 14,487 would require an additional 14.5 officers and four additional patrol cars at project buildout.

Without adequate funding, the Sheriff's Department would not be able to meet their staffing goal and new development would bring staff levels way below the ratio. Also, without additional law enforcement officers, the emergency response times to the Tassajara project site would be below the response time standards established by Policy 7-59 of the *General Plan*.

Additionally, the proposed development, coupled with the future development of Dougherty Valley, would require a sheriff's substation separate from the Valley Substation located in Alamo. The existing Valley Substation cannot accommodate the Tassajara Valley and/or the Dougherty Valley development. The Growth Management Element of the Contra Costa County General Plan sets a facilities standard of 155 square feet per 1,000 residents for building space to house the Sheriff's Department patrol functions. Based upon a population in the Tassajara development of 14,487 persons, approximately 2,245 square feet of building space would be required. If the Dougherty Valley development proceeds and is not annexed to the City of San Ramon, the Tassajara development could contribute its fair share towards the construction of one substation to serve both developments. However, if the Dougherty Valley development is annexed to San Ramon, then a Sheriff's substation would need to be provided within the Tassajara development.

The applicant's Public Facilities Implementation Plan (1993) states that if taxes generated with the Tassajara Plan Area will not support the cost of an Urban Level of Service, then a County Service Area (CSA) would be created and an additional benefit assessment within the plan area would be imposed. The planning area could also be annexed to the existing police services district (P-6) (Snell, 1994).

The CHP would also not be able to adequately serve the project area, even if its Dublin office were fully staffed (Contra Costa County, 1994). Thus, General Plan Goal 7-V would not be met in this area of the County.

Integrating defensible space features into future development plans helps to reduce the demand for law enforcement services. The Design Guidelines lack any reference to such features. Recommended measures would include landscaping of public places, such as parks and trails, to allow observation from roadways and residences; designing vandalism-resistant features, such as unbreakable lenses into light standards and providing defensible residential criteria such as how to display house numbers and appropriate residential landscaping, etc.

Mitigation Measures

All of the following mitigation measures are required to reduce the impact of increased demand for law enforcement services to a less than significant level and to bring the project into conformance with the standards of the General Plan.

- 4.10-1(a) The County should condition approval of the project on an adequate funding mechanism to provide a total of 14.5 law enforcement officers, four patrol cars and a substation encompassing 2,245 square feet upon buildout. The supplemental funding mechanism would augment existing General Fund revenues and ensure that the development receives adequate law enforcement services as called for in the General Plan standards.
- 4.10-1(b) If supplemental funding proves necessary, the County and project proponent should identify the funding mechanism which could include either annexation to existing Police Service District P-6 or, the formation of a new police services district. Whichever funding mechanism is put into place, consideration should be given to assuming traffic-related services from the CHP since they are unable to adequately patrol the area. Such a provision would ensure compliance with Goal 7-V of the General Plan.
- 4.10-1(c) Incremental hiring of law enforcement personnel will be required as development occurs in the Tassajara Valley. This incremental hiring and purchase of equipment should be tied to the applicant's phasing plan (refer to Figure 3-8 in Chapter 3.0) The Sheriff's Department should provide a hiring schedule to the Community Development Department which will be included in the monitoring program.
- 4.10-1(d) The applicant's capital improvement plan should identify the development's fair share of the cost to construct a sheriff's substation in Tassajara Valley. The plan would identify when fees should be paid.
- 4.10-1(e) The applicant's capital improvement plan should identify the development's fair share of the cost to purchase five patrol vehicles. The plan would identify when fees should be paid.
- 4.10-1(f) The Design Guidelines should incorporate crime prevention measures, such as defensible space standards (including "defensible" landscaping recommendations), criteria for displaying house numbers that would be visible from the street, and lighting and landscaping of open space areas.
- 4.10-1(g) Final development plans of subsequent projects should be reviewed by the Sheriff's Department to ensure appropriate crime prevention measures have been included and the roadway design is adequate.

FIRE PROTECTION

Setting

The project site is located within the San Ramon Valley Fire Protection District (SRVFPD). This fire district would respond to structural and wildland fires, emergency medical service and hazardous/toxic material spills in the planning area. The district serves an area encompassing 135 square miles and a population of approximately 90,000 people. SRVFPD maintains eight fire stations which are generally

equipped with 30 firefighting vehicles, six ambulances (basic life support) and four van-type advanced life support units. Station 36 located at 6100 Camino Tassajara Road currently serves the immediate area and is the first responder. This station contains six pieces of equipment with a minimum of three firefighters on duty per shift. The number of firefighters is augmented by a volunteer force. Station 35 in Blackhawk provides the secondary response if necessary (Coggiola, 1994).

The Fire District currently maintains an average response time of four-six minutes from point of dispatch to arrival at the scene. The paramedic unit maintains an average response time of 5.16 minutes. The *General Plan* calls for a five minute total response time 90 percent of all responses in urban and suburban areas (Coggiola, 1994).

SRVFPD is the first responder to wildland fires on Mt. Diablo. The California Department of Forestry firefighting unit is the second responder and ultimately becomes responsible for suppression of wildland fires occurring in the state park (Coggiola, 1994).

Relevant General Plan Policies

The following goals and policies taken from the Public Facilities/Services Element of the *Contra Costa County General Plan* (1996) are relevant to the provision of fire protection services to the Tassajara Valley planning area.

Goals

- 7-B To permit development in unincorporated areas only when financing mechanisms are in place or committed which assure that adopted performance standards in the growth management program will be met.
- 7-Y To ensure a high standard of fire protection, emergency, and medical response services for all citizens and properties throughout Contra Costa County.
- 7-Z To reduce the severity of structural fires and minimize overall fire loss.
- 7-AA To incorporate requirements for fire-safe construction into the land use planning and approval process.
- 7-AC To locate and design new fire stations in a manner compatible with surrounding development.

Policies

7-1 New development shall be required to pay its fair share of the cost of all existing public facilities it utilizes, based upon the demand for these facilities which can be attributed to new development.

- 7-2 New development, not existing residents, should be required to pay all costs of upgrading existing public facilities or constructing new facilities which are exclusively needed to serve new development.
- 7-11 A comprehensive financing plan which assures that needed public facilities are adequately financed, shall be included in all new specific plans and area general plans adopted by the County.
- 7-62 The County shall strive to reach a maximum running time of 3 minutes and/or 1.5 miles from the first-due station, and a minimum of 3 firefighters to be maintained in all central business district (CBD), urban and suburban areas.
- 7-63 The County shall strive to achieve a total response time (dispatch plus running and set-up time of five minutes in CBD, urban and suburban areas for 90 percent of all emergency responses.
- 7-64 New development shall pay its fair share of costs for new fire protection facilities and services.
- 7-65 Needed upgrades to fire facilities and equipment shall be identified as part of project environmental review and area planning activities, in order to reduce fire risk and improve emergency response in the County.
- 7-66 Sprinkler systems may be required in new residential structures, where necessary to protect health, safety and welfare.
- 7-68 Factors such as response times and distance, call volume and type, population, fire flow requirements, land use, development density and valuation, and access shall be considered when evaluating proposed station locations.
- 7-70 The effectiveness of existing and proposed fire protection facilities shall be maximized by incorporating analysis of optimum fire and emergency service access into circulation system design.
- 7-71 A set of special fire protection and prevention requirements shall be developed for inclusion in development standards applied to hillside, open space, and rural area development.
- 7-73 Fire fighting equipment access shall be provided to open space areas in accordance with the Fire Protection Code and to all future development in accordance with Fire Access Standards.
- 7-76 The architectural design and landscaping of new fire stations shall be complementary with surrounding land uses.
- 7-77 Fire stations shall be located and designed so as to minimize operating costs and maximize service standards in the area they serve.

7-80 Wildland fire prevention activities and programs such as controlled burning, fuel removal, establishment of fire roads, fuel breaks and water supply, shall be encouraged to reduce wildland fire hazards.

Implementation Measures

- 7-as In considering subdivision map approval, evaluate whether the project would violate the standards expressed in the Growth Management Element, in order to appropriately condition or deny such an approval.
- 7-au Fire protection agencies shall be afforded the opportunity to review projects and submit conditions of approval for consideration to determine whether:
 - there is an adequate water supply for fire fighting;
 - road widths, road grades and turnaround radii are adequate for emergency equipment; and
 - structures are built to the standards of the Uniform Building Code, the Uniform Fire Code, other state regulations, and local ordinances regarding the use of fire-retardant materials and detection, warning and extinguishment devices.
- 7-av The County Building Inspection Department and Community Development Department shall submit building and development plans for all new construction, including remodeling, to the local fire protection agency to assure that fire safety and control features are included that meet the adopted codes and ordinances of that agency.
- 7-ba Continue to levy fire facility fees for new development in unincorporated areas, in accordance with five-year plans.
- 7-bb Consider establishment of benefit assessment districts for fire protection purposes. In areas where operating shortfalls will result from increased service requirements related to new growth or the new service standards, the County should establish and/or increase fees generated from the benefit assessment districts.

Impacts and Mitigation Measures

Significance Criteria

Impacts are considered to be significant if the project: 1) causes a substantial increase or demand on the San Ramon Valley Fire Protection District, or 2) causes a substantial decrease in the quality or level of fire protection service to the point that the County *General Plan* performance standards are not met or, 3) is not consistent with the County *General Plan*.

All impacts are considered significant adverse impacts unless identified otherwise. The corresponding mitigation measure(s), unless otherwise noted, would be sufficient to reduce impacts to a less-than-significant level. Although not required by CEQA, some less-than-significant impacts have been discussed because they are issues of local concern. While no mitigation measures are required by CEQA for less-than-significant impacts, in some cases recommendations are proposed that could be considered by staff as conditions of project approval.

Impact 4.10-2 Implementation of the Tassajara development area would increase the need for fire protection service.

The Tassajara development would increase the demand for firefighting service and medical aid. Currently, calls for structural fires and medical aid are low because of the lack of structures and the small population in the planning area. Under present conditions, the threat of wildland fire is of the greatest concern for the district. With the proposed development the threat of fire could greatly increase due to the introduction of a suburban community. The applicant's plan calls for residential development to abut open space areas. This interface can become a potential fire hazard if appropriate fire prevention measures are not taken. The applicant's PUD Plan states that a wildland fire management plan will be prepared which will address ownership, maintenance, use, brush control, fire break requirements, fire-resistant landscaping measures, as well as periodic review of these measures. However, the PUD Plan does not identify when this management plan should be implemented (Planned Unit District (PUD) Plan, November 1995).

The development of the Tassajara planning area will substantially alter the level of service currently provided to the rural residents of the planning area. Implementation of the development proposal would require a suburban level of service. To provide this level of service, the Fire District would need to add additional equipment and replace the existing small station to properly respond to future calls for service. The present fire station located on Camino Tassajara was established as a temporary facility to serve the rural area. The size and condition of this station is not adequate to accommodate additional equipment necessary to serve the Tassajara development and accommodate additional firefighters (Coggiola, 1995). The fire station site must be a minimum of one to two acres and the station house must be no less than 8,500 square feet. The existing station site is one acre; however, the PDP allows less than 11,000 square feet for the site.

Based upon a time response study conducted for the Fire District (dk Associates, 1995, 1996), the entire Tassajara development could be served from Station 36 and the Blackhawk fire station #35. However, two runs tested in the study were right at the maximum response time allowed under the *General Plan*. An overlap in service from Station 35 is required to meet the required emergency response time to the northwesterly portion of the project site. Thus, the development as proposed would be consistent with General Plan Policy 7-63.

Mitigation Measures

The following mitigation measures are required to reduce the impact of an increase in demand for fire protection service to a less-than-significant level.

- 4-10-2(a) The applicant's capital improvement plan should identify the development's fair share of the cost to replace the existing fire station. The plan should also identify when this improvement will be completed.
- 4.10-2(b) The capital improvement plan should contain language directing future applicant's to participate in funding a fair share of new equipment. The type and number of pieces of equipment required would be coordinated with the San Ramon Valley Fire Protection District.

Impact 4.10-3 Development of the site would increase the potential risk for wildland fires.

The proposed development is primarily located along the valley floor and on the lower slopes. Low and very low density single-family development occurs on the upper slopes adjacent to the open space/wildland areas. The application calls for the open space to be maintained either by a private or public entity, such as a homeowner's association or the East Bay Regional Park District. Grazing of the hillsides has helped to maintain weed control, thereby reducing the fire hazard under present conditions. However, with the advent of development coupled with the accessibility and close proximity of the open space areas to the residential neighborhoods, the risk of wildland fire would increase. It should be noted that although the time response study conducted for the Fire District concluded that the entire project area can be served within the response standard, District officials pointed out that any deviation which requires the fire engines to slow down, e.g., sharp curves, twisty, winding roads, numerous stop signs, several turns, narrow streets with on-street parking, etc., increases the response time (Coggiola, 1994). This would be of critical concern for areas within the project site that are at the maximum response time, or when a fire occurs under dry, windy conditions in the open space and spreads rapidly into developed areas.

Fire District officials further stated that houses located in swales are more at risk to fire because the swale forms a fire chute forcing the flames upslope, usually fanned by the wind. Firefighters have a difficult time suppressing chute fires because of accessibility to head off the fire as it moves upslope (Probert, 1994).

The Fire District stresses that at the urban/wildland interface, the following criteria must be considered: firefighting access, abatement capabilities, and defendable zones where wildland fires can be stopped (Stonebridge, 1992). Although not included on the Preliminary Development Plan, the applicant's Design Guidelines (November 1995) provides criteria for the design of emergency access roadways. Both the Design Guidelines and the Planned Unit Development Plan (November 1995) specify landscaping guidelines and restrictions for a transition zone between the development and wildland areas. The transition zone would provide a buffer of drought-tolerant and fire resistant shrubs and trees.

Mitigation Measures

All of the following mitigation measures are required to reduce the impact of the potential risk for wildland fire to a less than significant level.

- 4.10-3(a) All houses shall have fire retardant roofs.
- 4.10-3(b) A 100-foot-wide buffer should be incorporated behind all structures which back up to open space/wildland areas. This buffer may include: fire/drought resistant vegetation and/or mowing and disking of wild vegetation. Criteria shall be developed in conjunction with SRVFPD Fuel Modification Standards and incorporated into the Planned Unit Development Plan and Design Guidelines and should be coordinated with the biological mitigation measures as identified on Figure 4.4-4.

Secondary Impacts

Mowing and disking a 100-foot-wide buffer would eliminate wildlife habitat and could conflict with mitigation measures to provide intermittent drainages along wildlife corridors. Providing a planted transition zone would create cover for small prey animals.

- 4.10-3(c) The SRVFPD should review and approve the criteria contained in the applicant's Design Guidelines (November 1995) prior to finalizing the design guidelines and preliminary development plan.
- 4.10-3(d) As a condition of project approval, the County should require the applicant to provide a wildland fire management plan as discussed in the PUD Plan (November 1995, page 62) The plan should be reviewed and approved by the SRVFPD.
- 4.10-3(e) All effort should be made to restrict building houses in swales or cantilevered out over the slope. However, if this is not achievable, extra fire prevention measures should be required, such as the use of fire retardant landscaping.

PARKS AND RECREATION

Park and recreation facilities that serve the Tassajara planning area are primarily provided by East Bay Regional Park District (EBRPD), Mt. Diablo State Park, Town of Danville, and cities of Livermore, Pleasanton and San Ramon.

EBRPD operates regional parks, lake recreation areas, and trails in Contra Costa County and western Alameda County. The nearest park/recreation facilities to the project site are shown on Figure 3-1 and include the following: Bishop Ranch Regional Open Space, Las Trampas Regional Wilderness, Sycamore Valley Regional Open Space and Morgan Territory Regional Preserve. Within a short driving distance (but off the map) is Shadow Cliffs Regional Recreation Area in Livermore and the

Pleasanton Ridge Regional Park. Directly south of the project site is the Tassajara Creek Trail. Originally a 451-acre park located on Federal land, the government withdrew its lease with EBRPD. What remains is a small staging area and 25-acre trail that follows Tassajara Creek, eventually extending north to Mt. Diablo (Lindenmyer, 1996).

The District's Master Plan map (1989) identifies future trails extending along Finley Road to Mt. Diablo, a trail from Morgan Territory Road into Mt. Diablo on the southeast side of the mountain, and a trail extending from Tassajara Creek north along the ridge separating Dougherty Valley from Tassajara Valley to Mt. Diablo State Park.

Local neighborhood and community parks are located in Danville and San Ramon. San Ramon currently owns or operates a total of approximately 200 acres of parks, of which 119.5 acres are presently developed. The city also maintains school parks which account for about 55 acres of the total (Contra Costa, 1994). The nearest park/recreation facilities to the project site are located at Central Park on Alcosta Boulevard, north of Bollinger Canyon Road. This park provides four lighted tennis courts, two basketball courts, three softball fields and one soccer field, and picnic facilities. Playing fields are in full demand during the summer months and plans are underway to add to existing facilities 8 to 10 acres for recreational use (Parker, 1996).

Danville maintains 12 parks totaling 120 acres of which 44 acres are designed for active use. Recreational facilities include one neighborhood park, five community parks, five school parks, a mini park, and a community center. The nearest park/recreational facilities to the project site include Diablo Vista at Crow Canyon/Tassajara Ranch Drive and Sycamore Valley Park on Camino Tassajara. These two parks provide a combined total of 14 playing fields, play area and picnic tables. Lighted tennis and basketball courts are being added to Diablo Vista park (Somers, 1996).

Town staff stated that all active sports fields are fully utilized and the town does not have enough fields to meet the current demand. Restrictions are placed on adult use to accommodate the numerous youth groups (Somers, 1996).

Planning Policies and Ordinances

The County General Plan Growth Management Element includes a policy that new development dedicate 3 acres of neighborhood parks per 1,000 new population (General Plan, 1996). County park criteria, as identified in the Open Space Element of the County General Plan, calls for 2.5 acres per 1,000 population for neighborhood parks and 1.5 acres per 1,000 population for community parks.

Contra Costa County maintains a park dedication ordinance (Contra Costa County Code Chapter 920-4 et seq.) that requires developers proposing residential projects to either dedicate 350 square feet of park area per dwelling unit in the project or pay \$2,000 in lieu of dedication (except in east Contra Costa County). The ordinance also allows partial credit toward the acreage of parkland required for a given development for certain private park and recreation areas.

Impacts and Mitigation Measures

Significance Criteria

Impacts are considered to be significant if the project: 1) causes a substantial increase or demand on existing park/recreational facilities, 2) does not meet the performance standards of the *General Plan* and/or County ordinance, or 3) is not consistent with the County *General Plan*.

All impacts are considered significant adverse impacts unless identified otherwise. The corresponding mitigation measure(s), unless otherwise noted, would be sufficient to reduce impacts to a less-than-significant level. Although not required by CEQA, some less-than-significant impacts have been discussed because they are issues of local concern. While no mitigation measures are required by CEQA for less-than-significant impacts, in some cases recommendations are proposed that could be considered by staff as conditions of project approval.

Impact 4.10-4 The Tassajara development would create a demand for park/recreational facilities. This is considered a less-than-significant impact.

The Tassajara PUD Plan (1995) designates 192 acres for neighborhood and community parks, as well as provides 2,245 acres of open space and an 18-hole golf course. Figure 3-5 in the Project Description illustrates the various park and recreational facilities, as well as trails. Based upon the *General Plan* requirement, the project application exceeds the neighborhood park standard by 5 acres. Project plans call for four neighborhood parks located throughout the development. These parks are either sited in close proximity or adjacent to the elementary and middle schools. The neighborhood parks range in size from 5.8 acres to 19 acres and will provide a variety of recreational facilities. The minimum size of the parks also exceeds County *General Plan* criteria which state that neighborhood parks can range in size from 3 to 17 acres, depending upon whether playgrounds and/or playing fields are included.

Land designated for active community/sports parks on the PDP is divided into two locations totaling 23 acres. This, too, exceeds the *General Plan* standard which would require a minimum of 22 acres. Additionally, 120 acres designated as community park land acts as a transition between the developed community and the open space areas. As stated in the PUD Plan (1995), these lands would be left in a natural state and their use would focus on passive recreational opportunities such as picnic facilities, native botanical gardens, interpretive nature trails, hiking, biking and equestrian trails. Parking facilities would be located at trail staging areas where major streets interface the park.

Park sites have been established in locations to take advantage of shared facilities with the schools, located within one-half mile of residential areas, central to the neighborhood and accessed without crossing a major arterial at grade (PUD Plan, 1995).

Table 4.10-1 shows the distribution of potential recreational facilities that could be developed within each park site.

TABLE 4.10-1
DISTRIBUTION OF POTENTIAL RECREATIONAL FACILITIES

	Acres	Baseball Field (Unlighted)	Baseball Field (Lighted)	Softball Field (Unlighted)	Softball Field (Lighted)	Basketball Courts	Soccer Fields	Tennis Courts(Unlighted)	Tennis Courts (Lighted)	Volleyball Courts	Play Areas	Picnic Areas (Group)	Picnic Areas (Individual)	Concession Stands, Restrooms	Hiking Trails	Other
Neighborhood Parks	15.0					_		1			2	1	1			
Finley Park	17.8	-		1		2	1	2		1	2	V				
Golf Park	5.9	_	-	_	-	1	1			1	1		1		-	TT:
Alamo Branch Park	5.8			1			1				1	1	1			Historic Farm Area
Tassajara Creek Park	19.0	2				2	2			1	2	1	1			Overlook, Nature Center
Town Green Park	AA										1		1			Rose Garden, Plaza
Subtotal	48.5															
Community Parks																
West Community Park	128.2		2	1			1				1	1	1		1	Nature Center, Staging
Sports Park	15.1		1		3	1	1		2	I	1	4	4	1		
Subtotal	143.3															
Golf Course	180															18 holes
TOTAL PARK FACILITIES	S	2	3	3	3	6	7	2	2	4	9			1		
Schools															-	
North Elementary School		1					i									
South Elementary School		1					1									
Middle School				1			1	3								
TOTAL SCHOOL FACILIT	TIES	2		1			3	3								
TOTAL FACILITIES		4	3	4	3	6	10	5	2	4	9			1	-	

Source: TVPOA - Tassajara Design Guidelines, 1995.

The proposed park acreage also exceeds the requirements of the County park dedication ordinance that requires the project proponent to either dedicate 350 square feet per residential unit or pay \$2,000 in lieu of dedication. The Ordinance would require a minimum of 48 acres; the project proposes a total of 81 acres for active recreational use and 120 acres for passive use.

Mitigation Measure

4.10-4 No mitigation measure is necessary or recommended.

Impact 4.10-5 During the first phase of development the project would not meet community park/recreation standards. This could overburden the three proposed neighborhood parks and impact area facilities, particularly in the Town of Danville.

During the first phase of development three of the neighborhood parks would be developed, totaling 29.5 acres. This would exceed the *General Plan* standard by 6.5 acres and is adequate to serve a projected population of 7,758 persons.

Phase 1 does not, however, provide for community park facilities. This may be inconsistent with the General Plan Growth Management Element, Public Facilities/Services Element and Open Space Element policies. The General Plan standard requires 1.5 acres per 1,000 population be set aside. Phase 1 development, therefore, would require 12 acres for a community park based upon a population of 7,758 persons. The community parks are slated to be developed in Phase 2 which is not projected to begin construction until year 2007. This is also inconsistent with the applicant's Public Facilities Implementation Plan (1993) which calls for developing park acres "in direct proportion to the amount of residential development at any point."

The demand for playing fields and tennis courts would either have to be absorbed by the three neighborhood parks, the north elementary school or other cities' community parks in the Tri-Valley area during this 10+ year interim. The neighborhood parks and school fields would not be lighted which further restricts their use and forces residents to use other facilities that provide night-lighting. This would create a significant impact on park facilities in Danville which are currently at their optimum use.

Mitigation Measure

To reduce this impact to a less than significant level, the applicant would be required to develop a minimum of 12 acres for a community park within Phase 1. Implementation of mitigation measure (b) would only partially reduce the impact.

4.10-5(a) A minimum of 12 acres should be provided for a community park in the first phase of development. This can be done by either prematurely developing the sports park that is slated for development in Phase 2, or relocating the sports park to a site within Phase 1.

or,

4.10-5(b) Temporary lighting could be provided at the Finley Park site to allow evening use. Since this park is the largest within Phase 1, it would be appropriate to temporarily light the playing fields and tennis courts. This mitigation would help to reduce the day-time burden but would only partially mitigate the impact. Additional acreage would still need to be provided to meet the community park standard.

Impact 4.10-6 Costs to construct and maintain the parks/recreational facilities, trails and open space areas have not been finalized.

The Tassajara Public Facilities Implementation Plan states that the parks and natural areas will be financed locally within the Tassajara Plan Area. The PUD Plan states that the maintenance of the plan's common areas will be accomplished by a special district and that district will be specifically funded for maintaining planting, irrigation systems and miscellaneous structures in public areas.

The PUD Plan also discusses alternatives for the ownership and management of the open space. These include: East Bay Regional Park District (EBRPD), establishing a community services district within the Tassajara Plan Area; private ownership or the county flood control district which would take ownership or easements over creeks. With the exception of a proposed regional park trail that would extend along the ridge separating Tassajara Valley from Dougherty Valley, EBRPD has not committed to owning or maintaining the open space lands. The District utilizes several legal mechanisms for purchasing or managing open space and they have their own set of criteria when undertaking such actions. If EBRPD either acquires or manages the land, they will require a funding mechanism to be in place to maintain the open space (Lindenmyer, 1996).

Mitigation Measure

4.10-6 The question of ownership and maintenance of public parks and open space should be resolved prior to approving the first subdivision maps. If EBRPD is the responsible agency, a funding mechanisms for park/open space maintenance should be in place prior to final development approval.

SCHOOLS

Setting

The Tassajara planning area is located within the San Ramon Valley Unified School District (SRVUSD). This district provides primary and secondary school services within a 100-mile area in central and eastern Contra Costa County and includes the communities of Alamo, Blackhawk, Diablo, Danville and San Ramon (Contra Costa, 1992).

SRVUSD presently operates 15 elementary schools, five middle schools, three high schools, one continuation high school and one independent study school. The District opened the new Iron Horse Middle School in September 1996. This school will have an ultimate capacity of 900 students, however due to lack of funding, only two-thirds capacity has been completed (Learned, 1996). The District is currently constructing Tassajara Elementary School near the Blackhawk east gate. District staff anticipates the school to be ready during the 1997-98 school year. When this school is completed, projections indicate it will be at capacity (Learned, 1996).

The District anticipates that its enrollment will range from 21,200 to 23,000 students by 2003 (an increase of approximately 13 percent to 20 percent over current enrollment levels). All of the schools in the northern portion of the District are presently at capacity and students are diverted to schools located within San Ramon. Limited space has become available in the San Ramon schools because of the new middle school and reorganization of the grades. (Elementary grades now include K-5 and middle school includes grades 6-8.) However, this capacity is being taken up with the diverted students (Learned, 1994, 1997). Classroom space is also limited since the state legislature agreed to shrink elementary class size to 20 students per teacher.

Several financing options to finance new school facilities are available to the District. School districts, under California law (California Government Code Sec. 53080 et seq.) can charge developers a square footage fee for new housing and commercial space. Currently, the District can charge \$1.84 per square foot of residential and \$.30 per square foot for commercial. These fees are not usually sufficient for the District to acquire land and construct a facility, thus other funding sources may be required such as the formation of a Mello-Roos Community Facilities District or passing local bond initiatives. The latter was defeated by voters in November 1995; however, the outcome of the election is currently in litigation. In April 1995, California voters approved Proposition 203, a state school bond measure that allocates \$3 billion for constructing new public schools and repairing existing schools throughout the state. The state legislature has also allocated money for the classroom reduction program.

Relevant General Plan Policies

The following goals and policies taken from the Public Facilities/Services Element of the *Contra Costa County General Plan* (1996) are relevant to the provision of schools in the Tassajara Valley planning area.

Goals

- 7-B To permit development in unincorporated areas only when financing mechanisms are in place or committed which assure that adopted performance standards in the growth management program will be met.
- 7-AO To assure the provision of adequate primary, secondary, and college facilities in the County.
- 7-AP To provide new schools in optimal locations to serve planned growth.

7-AR To assure that school facilities are adequate or committed to be adequate prior to approvals of major applications for residential growth.

Policies

- 7-140 The environmental review process shall be utilized to monitor the ability of area schools to serve development.
- 7-141 To the extent possible, new residential development General Plan Amendments or Rezonings shall, in the absence of the Planning Agency's satisfaction that there are overriding considerations (e.g., provision of low- or moderate-cost housing), be required to adequately mitigate impacts on primary and secondary school facilities.
- 7-142 The development of quality schools shall be supported by coordinating development review with local school district including such activities as designating school sites, obtaining dedications of school sites, and supporting local fees, special taxes, and bond issues intended for school construction.
- 7-143 The hearing body in reviewing residential projects shall consider the availability of educational facility capacity.
- 7-144 School site donation by developers shall be encouraged through the use of density transfer or other appropriate land use alternatives.
- 7-145 To the extent possible, the development of school facilities shall be provided in conjunction with and adjacent to local parks and trailways.
- 7-146 Adequate provision of schools and other public facilities and services shall be assured by coordinating review of new development with the cities and other service providers through the Growth Management Program, the environmental review process and other means.

Impacts and Mitigation Measures

Significance Criteria

Impacts are considered to be significant if the project 1) causes a substantial increase or demand on the San Ramon Valley Unified School District, 2) causes a substantial decrease in the quality of education to the point that the County *General Plan* performance standards are not met or, 3) is not consistent with the County *General Plan*.

All impacts are considered significant adverse impacts unless identified otherwise. The corresponding mitigation measure(s), unless otherwise noted, would be sufficient to reduce impacts

to a less-than-significant level. Although not required by CEQA, some less-than-significant impacts have been discussed because they are issues of local concern. While no mitigation measures are required by CEQA for less-than-significant impacts, in some cases recommendations are proposed that could be considered by staff as conditions of project approval.

Impact 4.10-7 Implementation of the development plan would require two additional elementary schools, one additional middle school and a portion of a new high school to accommodate students generated by the development.

The Tassajara development at buildout would generate a total of 3,075 students. Table 4.10-2 provides the generation rate broken out for both single-family and multi-family households.

TABLE 4.10-2 STUDENTS GENERATED BY PROJECT

	Generati	on Rate	Total Number of Students			
	Single-Family	Multi-Family	Single-Family	Multi-Family		
Elementary School - K-5	.3	.1	1,156	210		
Middle School	.15	.03	578	63		
High School	.25	.05	963	105		

Source: San Ramon Valley Unified School District, Learned, 1997.

Until schools are built within the development, students would attend schools in San Ramon. Resident schools assigned to the Tassajara Valley include Green Valley Elementary, Los Cerros Intermediate and Monte Vista High School. Their capacity and current enrollment is as follows (Learned, 1997):

	Grades	1996 Enrollment	Capacity
Green Valley Elementary	K-6	661	540
Los Cerros Intermediate	7-8	1,088	1,075
California High School	9-12	1,861	1,850

All of the schools are at capacity and the District is presently diverting students from the elementary and middle schools to other schools. Green Valley Elementary eliminated the music and computer rooms to accommodate more students; Los Cerros presently uses eight portables to accommodate students. Monte Vista High School utilizes 12 portables and a new two-story permanent building. The site is built out and can only accommodate additional students if existing facilities are replaced with two-story structures (Learned, 1997). The District is currently considering multi-track sessions and attendance boundary changes to accommodate the increased student population within the entire school district.

When K-6 and 7-8 students from the Tassajara development are ready to attend San Ramon schools, the District attendance boundaries will be reconfigured and other schools will be assigned to receive students from the Tassajara Valley area. At the present time, it is not known which schools would be assigned (Learned, 1996).

The Tassajara Preliminary Development Plan includes three schools sites—two elementary and one intermediate site. High school students would attend whichever high school has capacity until the new high school is constructed in Dougherty Valley. Currently, the high school planned for Dougherty Valley would have a capacity to accommodate 2,000 students. This would not be adequate capacity to accommodate students from Dougherty Valley, Tassajara Valley and the Tassajara Meadows and Wendt Ranch developments. The school should be large enough to accommodate a minimum of 3,000 students (Learned, 1997).

Phasing of the project as proposed on the phasing map (Figure 3-10 and on Table 3-4) would require at least one elementary school and the middle school to be built during Phase 1. This phase would generate a total of 1,852 students distributed as follows:

Grades	Students
K-6	917
7-8	351
9-12	584

Schools are built to accommodate 540 elementary students, 900 middle school students and 2,200 high school students. Based upon the above numbers, a new elementary school in Phase 1 would not have adequate capacity to accommodate the projected number of students in the elementary grades. The second elementary school and the middle school are both located within the development designated for Phase 2. Some K-6, middle and high school students may be required to attend schools out of the planning area until development begins in this phase. This would place an added burden on existing schools that are experiencing capacity problems.

The Planned Unit District Plan (page 54) states the project sponsors will comply with the requirements of the school district in a fair share timely payment of required fees and the PUD plan sets aside three school sites with the appropriate acreage. The project sponsors' Capital Improvement Plan assumes that the maximum school impact fee will be levied and the shortfall in financing (if any) will be financed in the manner specified by the state legislature.

Mitigation Measures

All of the following mitigation measures are required to reduce the impact on the school district to a less-than-significant impact.

- 4.10-7(a) The Capital Improvement Plan shall include language requiring developers of the Tassajara project to finance the construction of the three schools. Size of facilities and timing of construction should be coordinated with the District and defined in the CIP or school agreement.
- 4.10-7(b) Development fees determined by the County and the School District should be assessed individual development proposals to offset the cost of the new high school in Dougherty Valley. The initial size of the school will need to be expanded to accommodate the Tassajara Valley students.
- 4.10-7(c) School sites designated on the preliminary development plan should be approved by the school district prior to plan approval.
- 4.10-7(d) Future development approvals should be conditioned on the availability of adequate school facilities.
- 4.10-7(e) An annual review of student generation and facilities capacity should be conducted. During project construction the Community Development Department, project proponent and SRVUSD should meet annually to review and monitor the number of students being generated by the project, the progress of schools under construction, and the number of building permits issued, in order to determine the necessity for implementation of the above mitigation measures.

COMMUNITY COLLEGE

The Contra Costa Community College District provides higher education for residents of Contra Costa County. The District serves the entire county from four campuses, Diablo Valley College in Pleasant Hill, Los Medanos College in Pittsburg, Contra Costa College in San Pablo and the Center for Higher Education in San Ramon. The three primary campuses are at capacity and the Center for Higher Education is in limited rented space. District officials have stated that a campus is needed in south central county to serve the needs of the communities (Beckett, 1993). The increase in population within central county has placed a major strain on the closest campus—Diablo Valley College in Pleasant Hill. Student enrollment figures show that the DVC campus is operating at 85 percent utilization — 16,000-17,000 full-time students attend classes at that campus. Throughout the County students utilize more than one campus in order to obtain all of their courses (Beckett, 1995).

An article in the Contra Costa Times (1994) stated that 1200 students commute from the San Ramon Valley to the Pleasant Hill campus. As enrollment has increased this number has risen proportionately.

Presently, 4,000 students (equivalent to 1,000 full-time students) attend classes at the Center for Higher Education (Beckett, 1994, 1995). It is anticipated that by the year 2000 the area south of SR 24 and east of I-680 will generate a community college student population that approaches 8,000 (Dougherty, 1992).

The College District has successfully negotiated a Memorandum of Understanding with one of the developers of Dougherty Valley to include an urban campus in the Valley's Village Center with joint uses such as book stores, coffee shop, copy center, etc. This new campus location is reflected in the approved Dougherty Valley GPA (Cutler, 1996). Upon buildout, the facility would accommodate 8,000 students (Beckett, 1997). The District intends to construct the campus in phases. The first phase is intended to be built at 25 to 30 percent of the buildout maximum (2,000 to 3,000 students). Implementation of future phases will depend upon available space and number of students. Prior to constructing the campus, the Community College District must receive approval for its location from the California Secondary Education Commission, the California Community College State Chancellor's Office, plus the legislature. Should the state agencies and legislature not approve the new campus site, district personnel stated that a campus is still needed in the southern portion of the County (Beckett, 1995).

Relevant General Plan Policies

The following goals and policies addressing community colleges are taken from the Public Facilities/Services Element of the *Contra Costa County General Plan* (1996).

Goals

7-AO To assure the provision of adequate primary, secondary, and college facilities in the County.

Policies

- 7-143 The hearing body in reviewing residential projects shall consider the availability of educational facility capacity.
- 7-148 The County shall support efforts to build a new junior college in the San Ramon Valley.

Impacts and Mitigation Measures

Significance Criteria

Impacts are considered to be significant if the project 1) causes a substantial increase or demand on the Contra Costa Community College District, 2) causes a substantial decrease in the quality of education

to the point that the County General Plan performance standards are not met or, 3) is not consistent with the County General Plan.

All impacts are considered significant adverse impacts unless identified otherwise. The corresponding mitigation measure(s), unless otherwise noted, would be sufficient to reduce impacts to a less-than-significant level. Although not required by CEQA, some less-than-significant impacts have been discussed because they are issues of local concern. While no mitigation measures are required by CEQA for less-than-significant impacts, in some cases recommendations are proposed that could be considered by staff as conditions of project approval.

Impact 4.10-8 Students generated by the proposed development would exacerbate existing overcrowded conditions at the District's campuses. This is considered a less-thansignificant impact.

As discussed above, the Community College District is experiencing overcrowded conditions at its three campuses, but most notably at the Diablo Valley campus. A new campus is needed to serve central county residents. Buildout of the Tassajara planning area would generate a population of approximately 1,014 students based upon a generation rate of seven students per 100 population, significantly impacting existing facilities without the benefit of a new campus. However, since an urban campus has been approved as a part of the Dougherty Valley General Plan Amendment, this is no longer considered a significant impact. The new facility could accommodate future students of the Tassajara development.

Mitigation Measures

4.10-8

No mitigation measure is necessary or recommended.

CHILDCARE

Primarily, childcare services in the San Ramon Valley are provided by private providers at elementary schools, in private homes and in special day care centers.

A before- and after-school childcare service is offered by Kid's Country and operates year round at nine of the San Ramon Valley Unified School District's 14 elementary schools. The YMCA operates childcare services at three of the 14 schools and Larson's Growing Room operates at the remaining three schools. The schools have a capacity to accommodate a range of 28 to 65 students (Learned, 1996). The remaining childcare capacity is handled through family day care homes that serve children ages 1 to 12.

The Contra Costa County Childcare Ordinance (Contra Costa County Code Chapter 82-22) requires that childcare be provided for nonresidential projects having 100 or more potential employees, or for residential projects of more than 30 units. For each of these projects, the developer must provide childcare facilities necessary to meet the demands of the project or demonstrate that these needs would

be met through existing childcare facilities. The ordinance also requires that new facilities constructed to meet childcare demands of residential projects be operating to serve the demands of the project for a minimum of 25 years.

The California Department of Social Services licenses childcare facilities. Their standards require each facility to have per child a minimum of 35 square feet of indoor space and 75 square feet of outdoor space. Childcare providers indicate that to be profitable a facility must have the capacity to handle a minimum of 50 children. This would require a childcare center to have a minimum of 1,750 square feet of indoor space and 3,750 square feet of outdoor space (Contra Costa County, 1994).

Relevant General Plan Policies

The following goals and policies addressing childcare are taken from the Public Facilities/Services Element of the *Contra Costa County General Plan* (1996):

Goals

- 7-AS To assist and encourage the development of adequate, affordable and quality childcare in Contra Costa County.
- 7-AT To maximize parental choice for childcare options in the community.

Policies

- 7-151 The development of high quality childcare and preschool facilities shall be encouraged in appropriate locations, especially in conjunction with schools, church facilities and centers of concentrated employment such as business parks.
- 7-152 Childcare and preschool facilities shall be consistent with residential and commercial land use designations where safe vehicular access and effective buffering of neighboring residences can be achieved.
- 7-153 Proposed development projects shall be required to provide for childcare and preschool facilities in accordance with the *General Plan* and applicable ordinances, when significant demand for these facilities is created by the projects.
- 7-155 In order to increase parental choice, the location of childcare facilities shall be encouraged in residential neighborhoods, employment centers, at school sites, hospitals, religious facilities, parks and along transit routes.

Impacts and Mitigation Measures

Significance Criteria

Impacts are considered significant if the project 1) causes a substantial increase or demand on existing childcare facilities, and, 2) is not consistent with the County *General Plan*.

All impacts are considered significant adverse impacts unless identified otherwise. The corresponding mitigation measure(s), unless otherwise noted, would be sufficient to reduce impacts to a less-than-significant level. Although not required by CEQA, some less-than-significant impacts have been discussed because they are issues of local concern. While no mitigation measures are required by CEQA for less-than-significant impacts, in some cases recommendations are proposed that could be considered by staff as conditions of project approval.

Impact 4.10-9 The Tassajara development would create a substantial demand for childcare facilities for pre-school and middle-school age children.

SRVUSD would provide childcare service for children attending grades K-6 (Learned, 1996). However, pre-school and middle-school age children of the development would also require childcare services which are not offered through the School District.

The Tassajara Planned Unit Development Plan states that childcare will be provided in numerous ways in Tassajara. Childcare facilities will be permitted in the village centers and private homes. The PUD plan also states that a childcare assessment will accompany each Final Development Plan. This assessment will consider the need for childcare created by the project and the probable supply of childcare facilities. The plan also states that the final development plans should include or contribute to childcare facilities, such as in village centers. Both the PUD Plan and Design Guidelines lack specific criteria as to the placement of childcare centers. *General Plan* policies 7-151, 7-152 and 7-155 layout the framework where facilities can be located. This should be incorporated into the Design Guidelines.

Mitigation Measures

The following mitigation measures are required to reduce the impact to a less-than-significant level.

- 4.10-9(a) The Design Guidelines should be revised to incorporate language identifying appropriate locations for childcare facilities.
- 4.10-9(b) Applicants of future entitlements must comply with ordinance provisions (County Code, Chapter 82-22) to assure facilities in the area.

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dk Associates, 1996 and 1996, Time Response Study, 26 April, and letter amendment, 10 April.

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Lindenmyer, Thomas, 1996, Environmental Coordinator, East Bay Regional Park District, personal communication, 9 January.

Parker, Janice, 1996, City of San Ramon Community Center, personal communication, 15 April.

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4.11 CULTURAL RESOURCES

SETTING

The Prehistory, Ethnography and History of the project area is described in greater detail in Appendix H. Brief summaries of these topics follow.

Prehistory

Archaeological evidence suggests that prehistoric activity in the San Ramon Valley region began as early as 1000 B.C. and continued through the time of Spanish contact (Fredrickson, 1974; Banks and Morris, 1981). Fredrickson (1980) proposes that the earliest inhabitants were dependent on local resources and that trade was random with no established trade networks. As the society progressed, both the social and economic networks expanded, which led to fixed trade relationships and production specialization.

Ethnography

The earliest inhabitants of the San Ramon Valley have been alternately ascribed to two primary groups: the Ohlone and the Bay Miwok. Within these primary groups, the tribelet designations for the area include the Seunen and Chochenyo (Ohlone) and the Wolwon and Saclan (Bay Miwok). Scholarly reports offer various scenarios as to early inhabitants but no definitive evidence pinpointing a specific tribelet to the Tassajara project area has emerged (Baker, 1990; Banks, 1980; Banks and Morris, 1981; Busby, Garaventa and Yelding-Sloan, 1992; Gerike and Stewart, 1982; Roop and Flynn, 1981). One possible explanation for the problem of tribelet designation is that the project area was situated on or near the boundary of one or more of these tribelets (Gerike and Stewart, 1982; Busby, Garaventa and Yelding-Sloan, 1992).

History

Separated into three sub-categories, the historical antecedents of the San Ramon Valley area include the Spanish Period (1775-1822), the Mexican Period (1822-1848) and the American Period (1848-present).

The Tassajara project area was isolated geographically from the central locations and events associated with the Spanish and Mexican periods. Although isolated, the San Ramon Valley was crossed by the Fages-Crespi Expedition of 1772 on its way to Pleasanton, and the Anza-Font Expedition, following the same route as Fages and Crespi, in 1776 (Cook, 1957: 131-136). During the Mexican Period, the area was divided into large ranchos and predominantly used for livestock grazing and ranching (Cook,

1957). During the American Period, the valley land was primarily planted with orchard crops and wheat; the rolling hills were utilized for livestock grazing and barley and hay cultivation (Gerike and Stewart, 1982:5).

Known Cultural Resources and Previous Cultural Resource Surveys

On Friday, September 24, 1993, a record search covering the Tassajara Valley project area was conducted at the California Archeological Inventory, Northwest Information Center at Sonoma State University. All known archeological sites and previous cultural resource surveys within one mile of the Tassajara project boundary were identified on topographic maps of the area. The National Register of Historic Places, the California Inventory of Historic Resources, and California Historical Landmarks were examined to determine if any County, state, or federal historic landmarks or National Register of Historic Places properties were located in the project area. No cultural resource sites are known to exist within the boundaries of the project area.

Previous Surveys

Two small surveys have been conducted within the project area (Baker, 1990; Holman, 1992). No prehistoric or historic cultural resources were uncovered during the surveys. In total, less than one percent of the Tassajara project area was previously surveyed for cultural resources. Previous surveys within the Tassajara project area and vicinity are presented in Table 4.11-1.

Seven cultural resource surveys have been conducted within a one-mile radius of the project area. These seven surveys, together with one additional survey just outside of this one-mile boundary, recorded a total of 22 archaeological sites and 11 isolates. Ten of these isolates and all but two of the archaeological sites were recorded by Roop and Flynn (1981) just over a mile to the south and west of the Tassajara Valley project area. They include prehistoric sites, historic sites and isolates. The two remaining sites were recorded by Banks and Fredrickson in 1977, in an area approximately 0.5 mile northwest of the project area, with the final isolate recorded by Banks and Morris (1981) just to the southwest of the Tassajara survey area.

Literature Search Results

Additional information on the project area was gathered from other sources, including the Contra Costa County Historical Society (with the assistance of Ms. Betty Maffei), the Bancroft Library and Doe Library Map Room of the University of California, Berkeley. The archival work was fruitful, but by no means exhaustive.

Less than four artifacts; not part of a designated site.

TABLE 4.11-1 ARCHAEOLOGICAL INVESTIGATIONS WITHIN 1 MILE OF TASSAJARA VALLEY PROJECT AREA

Author	Location	Remarks
Baker, Suzanne, 1990 (S-11834)	Within the project area; about 0.9 mile south of the intersection of Tassajara Road with highland Road, in an unsectioned area of T2S, R1W (Tassajara).	No prehistoric or historic cultural resources were observed.
Banks, Peter M., 1980 (S-1936)	Borders on the project area to the east and is located in Sec. 34, T1S, R1E and Secs. 3 and 4, T2S, R1E (Tassajara).	No prehistoric or historic cultural resources were observed.
Banks, Peter M. and Matthew A. Clark 1978 (S-1289)	Borders on the project area to the north and is located in Secs. 19, 20, 29, 30, 31, 32, and 33, TIS, RIE (Diable)	No prehistoric or historic cultural resources were observed.
Banks, Peter and David A. Fredrickson 1977 (S-773)	Northwest of project area about 0.5 mile, Sec. 24, 25, and 36 in T1S, R1W, and Sec. 19, 30 and 31 in T1S, R1E (Diablo)	Two historic site locations with glass, ceramics, metal and brick are noted in addition to a third location of a former ranch house currently identified by the presence of two small Black Walnut trees and the remains of a windmill.
Banks, Peter and Joseph W. Morris 1981 (S-2695)	Borders on project area to the west-southwest, Un-sectioned area in T2S, R1E (Dublin and Diablo)	An isolated projectile point was recovered. Louis Banks house is of note to west of survey area.
Busby, Colin; Donna M. Garaventa and John Yelding- Sloan 1992 (S-14598)	North of Tassajara Project area 0.4 mile in Sec. 33, T1S. R1E (Tassajara)	No prehistoric or historic cultural resources were observed.
Chavez, David 1983 (S-5849)	Survey area is identical to that surveyed by Banks and Morris (1981) two years earlier.	Louis Banks house to the west of survey area; otherwise no cultural resources recorded.
Gerike, Christian and Suzanne Steward 1982 (S-5674)	Located about 0.5 mile to the west of the Tassajara Project area, this survey was located in Sec.1, T2S, R1W and Sec, 6, T2S, R1E (Diablo).	No prehistoric or significant historic cultural resources were observed.
Holman, Miley 1987 (S-10487)	This survey area begins about 0.3 mile to the west of the Tassajara Project area in an unsectioned area of Contra Costa County, T2S, R1W and R1E (Diablo and Dublin)	No prehistoric or historic cultural resources were observed.
Holman, Miley 1992 (no S#)	Located within the Tassajara Project area on the Corrie parcel, Sec. 9, T2S, R1E (Tassajara)	No prehistoric or historic cultural resources were observed.
Milliken, Randy 1979 (8-1539)	Located 0.3 mile to the east of the Tassajara Project area in Section 3, T2S, R1E (Tassajara).	No prehistoric or significant historic cultural resources were observed.
Roop, William and Katherine Flynn 1981 (S-7076)	Survey begins about a mile to the south and west of Tassajara Project area in unsectioned area of T2S and T3S and R1W and R1E (Livermore and Dublin)	Roop and Flynn identified 30 separate cultural resources of nine basic types, including isolates, cobble quarries, vegetal food processing sites, a possible trail and composite sites indicating a variety of activities. historic sties include pre-military land use and land uses associated with military activities.
Soule, William 1980 (S-1988)	Approximately 0.5 mile South-Southeast of project area in Sec. 21, T2S, R1E (Livermore).	No prehistoric or historic cultural resources were observed.

U.S. Geological Survey topographic maps of the area from 1898 (surveyed 1896) and 1906 provided additional limited historic information on the location of structures in the project area. All locations where a structure or structures were depicted within the project area were examined for the presence of historic debris and foundation remains.

Results of the Field Survey

Methodology

The intensive archaeological field survey of approximately 2,900-acres within the project area was conducted between October 5, 1993, and October 14, 1993, with the exception of the proposed retention basin, which was surveyed on July 20, 1994. The remainder of the 4,533-acre project area was not surveyed because some land owners within the plan area are not members of TVPOA and refused to allow access. Figure 4.11-1 shows the extent of the survey area.

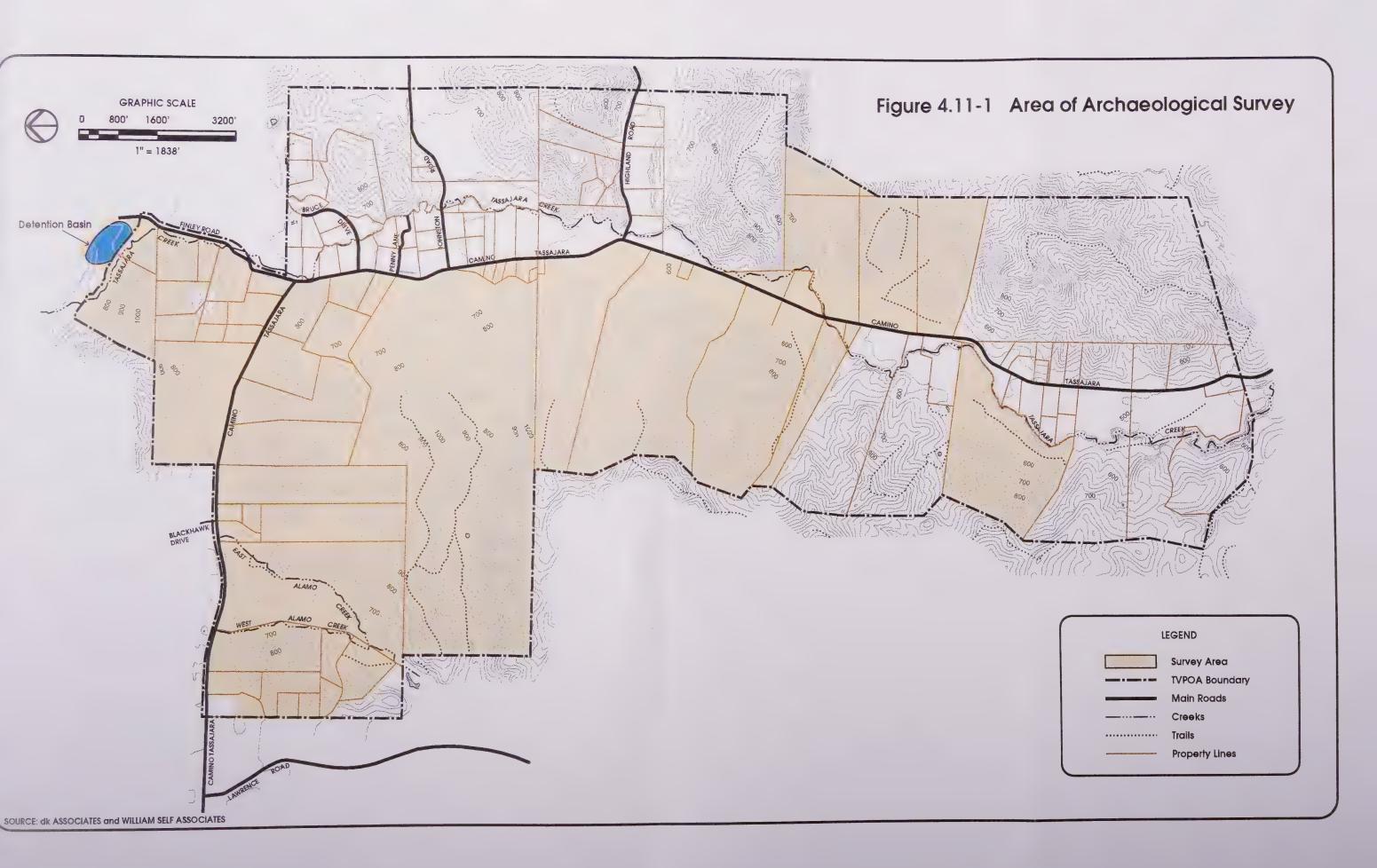
Slopes were excluded as it was surmised cultural resource deposits, either historic or prehistoric, were unlikely in these areas. They were, however, all examined visually for the presence of mine adits, visible debris or rock outcroppings that might have served as shelters or could contain petroglyphs or incipient mortars.

The other exception to this strategy was the exclusion of several small horse ranching areas, the largest of which consisted of approximately 100 acres in the extreme northwestern part of the survey area, where the survey crew might have caused considerable disturbance to the horses. The excluded area comprised under four percent of the total 2,900-acre survey area.

The survey utilized a transect spacing interval of 30 meters (approximately 100 feet) or less, walked in a zig-zag pattern. In flatter areas with good visibility, this interval was reduced to 10 meters. Ground visibility ranged from excellent to poor. "Excellent" areas consisted of 1) tilled or disked agricultural fields, 2) areas where grazing or natural influences kept ground cover to a minimum and 3) areas formerly used as orchards, where the ground was turned and clearly visible. "Poor" visibility areas consisted of lowland and upland soils covered in thick pasture grasses and disturbed soils densely covered with star thistle and wild artichoke. Most of the ground surface within the survey area fit into one or the other of these categories; there was very little area with average-good visibility.

Survey Results

No prehistoric cultural sites, features or objects were observed during the survey. Three historic sites estimated to be 100 years old or older were discovered within or abutting the project boundary. These are described below.



Site CA-CCo-693H

This site consists of a scatter of historic debris, including a variety of ceramic and glass fragments. It is situated in the middle of a plowed field, approximately 340 feet (103 meters) east of an eastern branch of Alamo Creek, and just south of a slight knoll (Wendt Ranch property). Vegetation on the site's surface includes morning glories, poppies, wild oats and star thistles. The site is 98 feet (30 meters) long by 55 feet (17 meters) wide, or 4,230 sq. ft. (401 m²). Covered with a medium-brown, sandy loam with few rocks, the site's surface is flat, and it is exposed to both sun and wind from all directions.

The most chronologically significant artifact observed at the site was a black glass bottle kick-up (base) probably manufactured before 1860. Also observed at the site were pieces of lavender, green, brown, aqua and clear glass, crockery, porcelain and stoneware sherds, terracotta bricks, a bolt, a square-headed, wrought nail, and a natural (non-worked) chunk of obsidian.

Site CA-CCo-694H

This 19th century homestead site is located on both sides of Alamo Creek (Wendt Ranch property) and consists of eight features, some of which are over 100 years old, and several pieces of old farm equipment. A structure is identified as the "Simson" property at this location on an 1873 map of the area, and two of the buildings were constructed using square-headed, wrought nails (manufactured prior to 1905). Its area measures 475 feet (145 meters) NW-SE by 308 feet (94 meters) NE-SW, or 114,900 sq. ft. (10,705 m²). Since the site's initial settlement, the location of the immediate stretch of Alamo Creek has apparently been disturbed. Blocks of broken and discarded concrete have been thrown into the creek at this point, altering its course. The eight farm- or ranch-associated features which characterize this habitation site are described below.

Feature 1 consists of a one-room building that may have served as either the original dwelling, a tack house, or workers' quarters. The building measures 7' 3" by 11' 6" (excluding its porch overhang), by a 10' maximum height. The shake roof of the structure slants up to a peak that extends about 3' 9" above the rectangular frame of the room. The building is oriented in an approximate north-south direction and is of board and batten construction. Parallel vertical boards, varying in width from 10" to 16" and approximately 6' 3" tall, are covered at the joints with thin (about 4" wide) vertical battens (presumably to keep it warm and rain proof). There is a horizonal, 4"-wide base board on the western elevation of the building.

The building's northern elevation exhibits a barn door hood (or overhang) that extends 4' 6" from the building. Under the hood is a 3' 1"-wide front door with a 6"-wide wooden frame on its top and eastern sides. Five storage shelves (attached) are located inside the front door, in the northeastern corner of the building. These measure 2' 4" wide and 19" deep, and extend from the floor to the roof.

Portions of the house's wooden floor are still found in the structure. The center of the eastern wall has a window, 2' long by 21" high, that is 4' above the floor. A 3" wooden frame remains on three sides

of the interior of the window, which is framed similarly on the exterior. A door that measures 2' 6" wide and 5' 8" high, opens in the southern elevation of the building.

Feature 2 comprises a barn that has a dirt floor and is constructed almost entirely with square-headed, wrought nails. The northern elevation contains two 7' 9"-high, hinged doors. The width of the northern and southern elevations is 16' 4". The eastern and western elevations of the structure are 17' 6" wide each, and the barn is completely open on its eastern elevation. Only the southern elevation has a window, unframed, located 3' 6" from the floor, and 2' 8" long by 1' 10 " wide. A small shelf, 10" deep by 5' 2" long, is located along the southern wall. It extends out from the southwestern corner, eastward along the southern wall, and is about the same height from the floor as the base of the window. In addition to its corner supports, the eastern elevation of the structure has two vertical support beams. Each corner support contains two diagonal braces on the base and at the roof intersection. The "A-frame" roof is constructed with regular 2-by-4 beams. A trailer (with a winch), and a 5'-high by 3'-diameter grain funnel made of tin are both stored in this feature.

Feature 3 consists of a barn, more recently constructed and larger than Feature 2. The building is constructed of boards with round-headed nails and has a corrugated tin roof, and appears to date to a period after the turn of the century, perhaps the 1920s or 1930s. It measures approximately 31' along the southern and northern elevations, and 52' 6" along the eastern and western elevations. The barn is approximately 20' high at its apex. Three major compartments comprise the interior. A lattice feed bin divides the central compartment from the area to the south, which consists of open area, also 17' wide. The northern compartment is divided by another feed bin into an area 17' wide (recently used for equipment storage), and the remaining compartment measures 18' 6" in width. The eastern and western halves of the structure contain two sliding doors on either side — one in both the southwestern and southeastern corners. The doors are 6' in height, and are as wide as the side compartments (17'). The central part of the eastern half of the barn is now completely open and covered with chicken wire and, therefore, it is difficult to ascertain its original construction.

Feature 4 consists of a barn that contains sliding door hinges with patent dates of November 19, 1901, and December 8, 1903. The barn is 39' long on the northern and southern elevations, with an additional 11-foot roof overhang. It measures 55' 10" long on the eastern and western elevations. The interior of the northern elevation of the building has a wall beginning in the northwestern corner and extending 24' to the east. There is a sliding door in the northwestern corner that spans 8' across and 7' 6" in height. Fifteen feet of the northern wall have been removed or have disintegrated. An animal pen, 16'6" wide and sectioned off by barbed wire, exists along the western side, and another pen is divided by a 3' 6"-wide grain bin on the eastern side. Part of the eastern elevation is shaded by the roof overhang. Aluminum siding has been nailed over the wooden shake roof, and the remaining building walls are constructed of boards with round-headed nails.

Feature 5 perhaps served as a stable or storage facility. It is 13' along the eastern and western elevations, and 18' 3" along the northern and southern elevations. A sliding door (5' 2" wide by 6' 4" high), located in the southeastern corner, appears to have been the only entrance. The building is approximately 11' at its highest point. The door is currently broken, and access to the building is obtained by crawling through a broken wall. The door both slides open and also contains a swinging

door. Both doors measure approximately 2' 6"; the exterior sliding door is of vertical boards, and the inner swinging door is divided by horizonal wooden panels.

The barn's wallboards vary in width from 10" to 18", and the building rests on a concrete foundation. Both square- and round-headed nails are found in the walls of the building, which is divided into three compartments (possibly stables), in addition to a wide walk area along the southern elevation. All compartments are 6' deep. The first compartment is 7' wide, the second is 5' 8" wide, and the third is 4' 8" wide. The building has an "A-frame", wooden, shingle roof with rectangular openings on the eastern and western elevations, and contains support beams (2-by-4s) horizontally on the western side, 3' 10" from the ground.

Feature 6 consists of a pile of loose logs, boards and soil, located near two walnut trees, and measures about 10' by 8'. Dr. Nolan Sharp, a neighbor, indicates that this area was originally covered with logs and used as a loading area for livestock.

Feature 7 comprises a possible privy that consists of a collapsed pile of boards, situated over a barely visible hole. The structure was built with square-headed, wrought nails. Pieces of the door, made of tongue and groove construction, are visible amongst the piled wood.

Feature 8 consists of a pile of rectangular, red clay bricks. There are no identifying marks on the bricks, and it is not clear if they were handmade. Approximately thirty bricks were visible on the ground surface, with additional bricks apparent underneath.

In addition to the site's features, artifacts include one large wagon, about 12' in length; one metal plow; and a baler. Each was constructed originally with rubber tires. Also observed at the site were square-headed, wrought nails. No other artifacts (e.g., pottery, glass, etc.) were located on the ground surface of the site.

The environment of the site differs from that found in the surrounding ridges and open fields. It is situated in a flat area at the point of a ridge which fanned out to the south; Alamo Creek runs through the center of the site. Apparently, in recent years Alamo Creek has begun to run more forcefully because of the developments taking place across Tassajara Road. To help control development, rip-rap was used in Alamo Creek to help stop erosion caused by the stream. Blocks of broken and discarded concrete fill the creek near the site. A variety of trees are found at the site including black walnuts and eucalyptus. Other on-site vegetation emphasizes the disturbed nature of the soil: star thistles, wild artichokes and morning glories. Cattails are found growing in Alamo Creek.

Site CA-CCo-695H

This site consists of an historic debris deposit, including a variety of ceramic and glass fragments. Since a structure is shown near this location on the 1898 USGS Mt. Diablo topographic map, it is assumed this site is approximately 100 years old. Three features characterize the site and are discussed below: a spring covered with boards, two parallel concrete piers with boards bolted to the top, and a ranch-style entrance arch constructed of two broken telephone poles and a cross beam. The site covers

an area 24 meters long by 94 meters wide, or 2,724 square meters; plus one half-circle measuring 24.4 meters in diameter.

Feature 1 consists of a spring with boards covering an area of wet ground and green grass (in contrast to the dried grasses of the surrounding area). There is no physical evidence of a structure ever having been located at this spring. Feature 2 consists of two parallel, concrete piers covered by wooden boards that are attached with bolts. Feature 3 consists of a 10'-high, ranch-style arch at a dirt driveway entrance, and is constructed of two vertical telephone poles and a horizontal 2" by 4" plank, that spans about 10' across the top.

Site CA-CCo-695H is situated at the corner of two roads, Tassajara Road and Finley Road. Tassajara Creek runs through the site. Unfortunately, road litter has mixed at this location with site materials. Although neither the building shown on the 1898 Mt. Diablo topographic map nor any other structure exists here, the vegetation at the site demonstrates great ground disturbance; the site is covered by a dense growth of wild artichokes and wild oats, in addition to walnut trees and valley oaks.

Two diagnostic artifacts were observed among the artifacts at this site, both of which were of a later period. The first is the bottom of a clear glass bottle with an embossed maker's mark identifying the maker as the Hazel-Atlas Glass Co. of Wheeling, West Virginia, and was manufactured between 1920 and 1964 (Toulouse 1971:239). The second is a thick piece of brown glass manufactured by Northwestern Glass Co., Seattle, Washington after 1931 (Toulouse 1971:390). Also found at this site was earlier (pre-1900) debris, including a piece of thick lavender glass, two square-headed nails, a piece of cobalt glass, a piece of aqua glass and a piece of china with a white and blue pattern. In addition to the historic debris, but perhaps of a latter period, are three features: a natural spring covered with wooden boards, two parallel concrete piers with boards bolted on top and a ranch-style entrance arch made of two broken telephone poles and a cross beam.

IMPACTS AND MITIGATION MEASURES

Significance Criteria

Appendix K of the CEQA Guidelines states that a project will be considered to have a significant effect on cultural resources if it will:

Disrupt or adversely affect a prehistoric or historic archeological site or a property of historic or cultural significance to a community or ethnic or social group

In addition, CEQA contains provisions relative to preservation of historic and prehistoric cultural sites. Appendix K of CEQA directs public agencies (e.g., Contra Costa County) to "avoid damaging effects on an archeological resource whenever feasible. If avoidance is not feasible, the importance of the site shall be evaluated . . . " as a means of determining impact and developing mitigation measures. CEQA Appendix K, Section III, states that an "important archeological resource" is one which:

- A. Is associated with an event or person of:
 - 1. Recognized importance in California or American history, or
 - 2. Recognized scientific importance in prehistory;
- B. Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archeological research questions;
- C. Has special or particular quality such as oldest, best example, largest, or last surviving example of its kind;
- D. Is at least 100 years old and possesses substantial stratigraphic integrity; or
- E. Involves important research questions that historical research has shown can be answered only with archeological methods.

To evaluate cultural resource sites against such broad criteria requires consideration, among other things, of the overall integrity of the site, the regional culture history (the types, ages and distribution of other sites in the region), and the nature of questions that researchers are attempting to address regarding the history or prehistory of the region.

Archeological site evaluation assesses the potential of each site to meet one or more of the criteria for "importance" (CEQA) based upon visual surface and subsurface evidence (if available) at each site location, information gathered during the literature and record searches, and the researcher's knowledge of and familiarity with the historic or prehistoric context associated with each site.

All impacts discussed below are considered to be significant unless identified otherwise. All mitigation measures would reduce the impact identified to a less-than-significant level unless stated otherwise.

Impact 4.11-1 The project could result in the loss of a potentially important historic archeological site.

Three historic archeological sites, each estimated to be 100 years or older in age, were observed within the Tassajara Valley project area as a result of project-sponsored surveys. Two of the sites, CCo-693H and CCo-695H, comprise scattered historic debris that is representative of household refuse. The third site, CCo-694H, is a homestead and ranching complex with standing architectural resources, some of which appear to pre-date about 1890, and which agrees with the location of structures on an 1873 map of the area. Since the initial survey for this EIR was conducted, the property containing sites CCo-693H and CCo-694H has been approved for development. These two sites are located within the Wendt Ranch development and the impacts of that project on these resources were evaluated in the Wendt Ranch EIR (Contra Costa County, 1996). Because the importance of such sites lies in their ability to yield information that will address research questions on the historic archeology of the region, it is imperative to define whether or not buried (and thus previously unseen) resources or features exist within site CCo-695H. Until such time that evidence is gathered to define the complete cultural component at this site, both horizontally and vertically, loss of this cultural resource is considered a significant impact.

Mitigation Measures

The following mitigation measures are required to reduce the impact to a less-than-significant level.

- 4.11-1(a) Limited subsurface testing should be conducted at the historic archeological site discovered within the Tassajara Valley project area to determine the extent of buried cultural deposits, if any, and importance of each site. Should this site be found to exhibit surface or near-surface components only, the recording of the site and results of limited subsurface testing shall serve as adequate mitigation to permit loss of the resource.
- 4.11-1(b) Should a site be found to contain subsurface deposits or features that are of a complexity or extent that cannot be characterized sufficiently through limited subsurface testing, it is recommended that either (1) the site be avoided and dedicated as open space with assurances that the cultural component is preserved; or (2) a program of data recovery be designed to gather enough data to permit loss of the resource, as described in the CEQA Appendix K Guidelines.

Impact 4.11-2 Previously undiscovered historic or prehistoric archeological sites or features could be encountered during project-related construction activities.

Should any previously unidentified cultural resources be discovered during construction of the project, the resource should be evaluated and mitigation measures applied as warranted. Section 7050.5(b) of the California Health and Safety Code should be implemented in the event that human remains, or possible human remains are located. It states:

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

The coroner, upon recognizing the remains as being of Native American origin, is responsible to contact the Native American Heritage Commission within 24 hours. The Commission has various powers and duties to provide for the ultimate disposition of any Native American remains. Sections 5097.98 and 5097.99 of the Public Resources Code also call for "protection to Native American human burials and skeletal remains from vandalism and inadvertent destruction." Unless evaluated for importance, loss of cultural resources discovered during construction is considered a significant impact.

Mitigation Measure

4.11-2 To avoid significant impact to previously undiscovered cultural resources that might be encountered during construction, the project sponsor shall (1) contract the on-call services of both a qualified professional (historic and prehistoric) archeologist (one meeting the criteria of the Society of Professional Archaeologists), as well as an Ohlone or Miwok Native American observer, (2) stop work in the immediate area of the find, secure the area and contact the archeologist, and (3) instruct construction personnel on the project as to both the potential for discovery of cultural or human remains, and the need for proper and timely reporting of such finds, and the consequences of failure thereof.

Impact 4.11-3 The proposed project may disturb unknown archaeological or cultural sites located on unsurveyed portions of the project site.

Approximately 2,900 acres of the 4,533-acre site have been surveyed for cultural resources. The remainder of the site is not under the direct control of TVPOA and owners did not allow access to the archaeological survey team. Therefore, additional cultural resource sites may exist on the unsurveyed portions of the plan area.

Mitigation Measure

4.11-3 Cultural resource surveys will be conducted for all portions of the TVPOA project site prior to approval of Final Development Plans on the unsurveyed areas being considered.

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4.12 JOBS/POPULATION/HOUSING

INTRODUCTION

This section examines the market and demographic issues associated with implementation of the proposed Tassajara project. The specific issues discussed in this section include:

- The effect of the project on jobs/housing balance for Contra Costa County and the Tri-Valley region; and
- The effect of the project on the County's ability to meet its housing policy goals and objectives, and the subregion's need for affordable housing.

Overview

A jobs/housing "balance" is a measure of the relationship between a region's jobs and employed residents (labor force). The quantity of employed residents is largely a function of housing supply. An area with more jobs than housing supply is likely to experience rapid escalation in housing prices, which particularly impacts residents with low incomes and increases pressure for additional residential development. In an area with fewer jobs than employed residents, many workers will commute to jobs located elsewhere. A significant imbalance of jobs to housing will result in negative impacts, such as traffic congestion and declining air quality.

At the project level, it is difficult to attain a situation where all residents work and live on-site. Although the proposed project's on-site jobs/housing balance is an important measure, the project's contribution to subregional and regional job/housing balances is more important in assessing overall impact. The jobs/housing balance concept provides a means to examine whether the planned residential development will meet the demand for housing generated by existing employment, as well as the job growth anticipated for the project, the County and the Tri-Valley region.

In order to assess the "affordability" of the project's housing, projected housing demand (measured in terms of household incomes and housing price categories) is compared to supply (measured in terms of the proposed housing types and prices for the project). This analysis allows the project to be evaluated in terms of Contra Costa County's housing policies, programs and objectives.

Methodology

The analysis assumes that the proposed project's growth will occur within the context of a baseline development forecast for the Tri-Valley called the "Expected Growth Scenario," which was prepared by the Technical Advisory Committee (TAC) to the Tri-Valley Transportation Council (TVTC). Three approaches to the jobs/housing balance analysis are taken, as outlined below. In addition, measures of housing affordability are addressed.

Simple Ratios of Jobs/Housing Balance

The first and simplest jobs/housing measure is the ratio of "employed residents to jobs," with one (1.0) indicating a perfect balance between the two variables. This ratio excludes any consideration of housing affordability; for instance, a region can have a balance between the number of local jobs and the occupant capacity of local housing, and not have housing stock that is affordable to locally employed workers.

Comparisons of Household Incomes and Housing Prices

Comparisons of household incomes and housing prices explicitly examine the fit of housing prices and rents to the incomes of local worker households. This type of analysis can give reasonable projections of whether a study area is likely to provide an adequate supply of affordable housing and requires assumptions and estimates for: 1) the types of jobs projected for the proposed project and surrounding region; 2) the salary ranges of the jobs; 3) number of employees per household and household incomes; and 4) housing prices and rents.

Jobs/Housing Balance in Relation to Transportation System Constraints

The third measure of jobs/housing balance compares projected development to anticipated transportation capacity in the study area. In any metropolitan region, cross-commuting among communities is inevitable as workers freely select their place of employment and residence. Not all Tri-Valley housing units will be available to or chosen by future Tri-Valley workers. Some proportion of future Tri-Valley workers will travel to the area from other communities. This would be expected even if the jobs to employed residents ratio were 1.0 and worker incomes matched available housing supply and prices.

The number of workers likely to commute into the Tri-Valley was estimated assuming planned transportation capacity at the gateways to the region. No major advances in transportation technology or commuter behavior are assumed to occur by 2010; however, planned transportation improvements are also assumed not to be constrained to current guaranteed funding. (See Technical Appendix G for more in-depth methodology and description of the gateway analysis.)

Standard Measures of Housing Affordability

In measuring housing affordability, this analysis relied upon the four income groups, shown on Table 4.12-1, defined by the U.S. Department of Housing and Urban Development (HUD). These groups are: very low, low, moderate and above moderate income. The above moderate-income group is divided into three categories, as so many households near the project plan area have above moderate income. The term "lower-income households" used in this study refers to all households in the very-low- and low-income categories. The income ranges are those used in Contra Costa County's *General Plan* Housing Element (County, 1996) and are based on set percentages of the area's median income for a family of four, which is \$44,100 in 1990 dollars.

Table 4.12-1 also provides estimates of affordable housing monthly rents and purchase prices, by income category. For ownership housing, an affordable purchase price is assumed to be about three time annual household income for moderate and above moderate income households and four times income for lower-income households. Affordable rent is assumed to be equal to 30 percent of a household's gross monthly income for the moderate and above moderate income groups, and 25 percent for lower-income households.

SETTING

Regional Overview

The Tri-Valley region comprises the Livermore, Amador and San Ramon Valleys, and spans roughly the eastern half of Alameda County and the south-central portion of Contra Costa County. It is part of one of the state's most populous and fast-growing areas, in terms of both new residents and new jobs.

Population in Alameda and Contra Costa Counties is expected to increase significantly within the next two decades, accounting for 37 percent of the Bay Area's anticipated 1.5 million new residents between 1990 and 2010, according to the Association of Bay Area Governments' (ABAG) *Projections '94*. While the existing major population centers of both counties are located outside the Tri-Valley, the Tri-Valley communities combined will account for about 142,200 new residents, or about 25 percent of the 1990-2010 growth forecast for these communities. This represents a population increase of nearly 65 percent within the Tri-Valley. (See Table 4.12-2.)

New employment in Alameda and Contra Costa Counties is expected to account for 35 percent of the 886,500 new Bay Area workers expected by 2010, or a total of nearly 314,300 jobs. The Tri-Valley "Expected Growth" forecast by the TVTC projects nearly 87,000 new jobs by 2010, or about 28 percent of the employment growth in Alameda and Contra Costa Counties. This represents an employment increase of nearly 100 percent over TVTC estimates of 1990 jobs in the Tri-Valley.

TABLE 4.12-1

HOUSING AFFORDABILITY FOR RESIDENTS OF CONTRA COSTA COUNTY

Very- Low Income Households		ome	Low In		Modera Hous	Above Moderate Income	
Household Income for family of 4 (1)	\$0 -	\$22,500	\$22,501 -	\$35,300	\$35,301 -	\$52,900	\$52,901 +
Affordable Monthly Rent Payment (2)	\$0 -	\$438	\$439 -	\$734	\$735 -	\$1,322	\$1,323 +
Affordable Housing Purchase Price (3)	\$0 -	\$63,999	\$64,000 -	\$100,999	\$101,000 -	\$198,999	\$199,000 +
Estimated 2010 households in Tassajara Valley with Project (4)		2		1		1,718	4,194

- 1 The incomes shown are 1990 median income levels for the Oakland PMSA, (Alameda and Contra Costa Counties), as defined by HUD (Contra Costa County, 1990)
- 2 Assumed to be 25% of gross monthly income for very-low and low-income households; 30% of gross monthly income for moderate and above-moderate income households.
- 3 Mortgage payments assumed no more than 25% of gross income for lower-income households; 33% of gross income for moderate and above-moderate income households; assumes 30-year loan on 80% of housing cost at 10% interest.
- 4 Based on project housing product and price estimates by Anthony Hurt (Hurt, 1993), and Tract 3551.03 Census data, adjusted to 1990 constant dollars by EPS. Assumes 119 existing HH remain at 2010.

Tassajara Valley Study Area households (HH) at buildout (2010) = 5,915 , assuming

5,950 proposed TVPOA Project dwelling units (DU), occupied at 95.0% or 5,653 HH,

250 proposed non-TVPOA DU (Corre/Gentry land), occupied at 95.0% or 238 HH, located west of TVPOA PUD, plus 24 existing Tassajara Valley households in Traffic Analysis Zone 247.

Sources: Housing Element, Contra Costa County General Plan, 1992; Economic & Planning Systems, 1995.

TABLE 4.12-2
TRI-VALLEY POPULATION GROWTH BY SUBAREA - NO PROJECT

		19	990	20	010		1990-2010	1
		Existing	Share of	Forecast	Share of	Popula-	Share of	Annualized
		Popula-	Tri-Valley	Popula-	Tri-Valley	tion	Tri-Valley	Growth
Subarea		tion	Total	tion	Total	Growth	Growth	Rate
Danville		31,597	13.8 %	39,883	10.8 %	8,286	5.8 %	1.2%
San Ramon		38,717	17.0 %	43,032	11.6 %	4,315	3.0 %	0.5%
Dougherty Valley		303	0.1 %	29,856	8.1 %	29,553	20.9 %	25.8%
Alamo/Blackhawk	(2)	17,822	7.8 %	17,257	4.7 %	(565)	(0.4)%	-0.2%
Tassajara Valley	(1)	371	0.2 %	1,056	0.3 %	685	0.5 %	5.4%
Other CCC		1,389	0.6 %	2,362	0.6 %	973	0.7 %	2.7%
CCC Subarea		90,199	39.5 %	133,446	36.1 %	43,247	30.5 %	2.0%
Dublin		21,775	9.5 %	23,614	6.4 %	1,839	1.3 %	0.4%
East Dublin		149	0.1 %	30,647	8.3 %	30,498	21.5 %	30.5%
Pleasanton		57,162	25.1 %	77,024	20.8 %	19,862	14.0 %	1.5%
Livermore		58,654	25.7 %	73,801	20.0 %	15,147	10.7 %	1.2%
North Livermore		104	0.0 %	28,988	7.8 %	28,884	20.4 %	32.5%
Other AC		145	0.1 %	2,352	0.6 %	2,207	1.6 %	14.9%
AC Subarea		137,989	60.5 %	236,426	63.9 %	98,437	69.5 %	2.7%
Total Tri-Valley		228,188	100.0 %	369,872	100.0 %	141,684	100.0 %	2.4%

 ¹ Includes projected growth in Tassajara Valley outside proposed TVPOA project:
 250 dwelling units @ .95 occupancy and 2.88 residents per occupied unit = 685 new residents in TAZ 240

Sources: Contra Costa Transportation Authority LUIS, 1993; TVTC Final Expected Growth Scenario, 05/03/95; TVPOA Land Use Data by Traffic Zone 09/15/95; Economic & Planning Systems, 1995.

² Decrease in population attributable to projected decline in population density.

According to ABAG, regionwide jobs/housing imbalances, lack of affordable housing near job centers, severe transportation system problems and infrastructure funding constraints are leading to a severe job demand and labor supply imbalance. Although the projections discussed above assume sufficient infrastructure will be developed to accommodate new growth, ABAG specifically indicates that infrastructure availability may constrain anticipated development in the Tassajara Valley. Housing production and housing prices are identified by ABAG as the most serious constraints to long-term economic health in the Bay Area; maximizing regional housing production of affordable dwellings is considered essential to maintaining a strong economy.

Tri-Valley Population and Household Composition

Expected regional population growth without the proposed project (the no project alternative) is shown by Tri-Valley subarea on Table 4.12-2. Expected regional household growth without the project is shown on Table 4.12-3. These figures are derived from the final "Expected Growth Scenario" projections prepared by the Technical Advisory Committee (TAC). Technical Appendix G contains a discussion of the different assumptions used in the projections prepared by ABAG versus those of the TAC.

The population of the Tri-Valley is projected to grow at an average annual growth rate of about 2.5 percent between 1990 and 2010 under the Expected Growth Scenario, increasing from 228,000 to 370,000. Three areas which are relatively undeveloped at present, namely the Dougherty Valley, East Dublin, and North Livermore, are expected to grow rapidly over this time period. A new population of 29,500 residents is projected for the Dougherty Valley, about 30,500 persons are expected to be added in East Dublin, and nearly 29,000 more residents are expected in North Livermore. These areas will require provision of extensive new and expanded infrastructure capacity. Considerable population growth is also expected in and around existing Tri-Valley communities, particularly the cities of Pleasanton and Livermore (Barton-Aschman, 1995).

Household growth is projected to occur more rapidly than population growth because person-perhousehold ratios are assumed by the TAC to decrease from 1990 to 2010. The relative distribution of forecast household growth will be similar to the population forecasts, however. The reduction in household size mirrors historical trends in the Bay Area from 1960 to 1980, incorporated into ABAG's *Projections '87* and *Projections '90*. (ABAG, however, has noted a reversal of the historical trend toward declining household size during the 1980s and early 1990s, and projects increasing household sizes for Contra Costa and Alameda Counties in its *Projections '92* and *Projections '94* forecasts [see Technical Appendix G].)

Tri-Valley Employment

Expected regional employment growth based on the Expected Growth Scenario, without the proposed project, (the no project alternative) is shown by Tri-Valley subarea on Table 4.12-4. Currently, no single community in the Tri-Valley is the dominant employment center. San Ramon and Pleasanton each provided roughly one-quarter of the jobs in the region as of 1990, while Livermore provided 30

TABLE 4.12-3
TRI-VALLEY HOUSEHOLD GROWTH BY SUBAREA - NO PROJECT

		1:	990	20	10		1990-201	0
Subarea		Existing House- holds	Share of Tri-Valley Total	Forecast House- holds	Share of Tri-Valley Total	House- hold Growth	Share of Tri-Valley Growth	Annualized Growth Rate
						GIOWUI		- iale
Danville		10,999	14.0%	14,720	10.6%	3,721	6.2%	1.5%
San Ramon		13,176	16.8%	15,885	11.5%	2,709	4.5%	0.99
Dougherty Valley		101	0.1%	10,356	7.5%	10,255	17.0%	26.19
Alamo/Blackhawk		6,011	7.7%	6,232	4.5%	221	0.4%	0.29
Tassajara Valley	(1)	119	0.2%	357	0.3%	238	0.4%	5.69
Other CCC		474	0.6%	858	0.6%	384	0.6%	3.09
CCC Subarea		30,880	39.4%	48,408	34.9%	17,528	29.1%	2.39
Dublin		6,788	8.7%	7,549	5.4%	761	1.3%	0.59
East Dublin		49	0.1%	13,245	9.6%	13,196	21.9%	32.39
Pleasanton		19,762	25.2%	30,276	21.9%	10,514	17.5%	2.29
Livermore		20,819	26.6%	27,005	19.5%	6,186	10.3%	1.39
North Livermore		38	0.0%	11,253	8.1%	11,215	18.6%	32.99
Other AC		50	0.1%	806	0.6%	756	1.3%	14.99
AC Subarea		47,506	60.6%	90,134	65.1%	42,628	70.9%	3.39
Total Tri-Valley		78,386	100.0%	138,542	100.0%	60,156	100.0%	2.99

¹ Includes projected growth in Tassajara Valley outside proposed TVPOA project: 250 dwelling units @ .95 occupancy = 238 new households in TAZ 240

Sources: Contra Costa Transportation Authority LUIS, 1993; TVTC Final Expected Growth Scenario, 05/03/95; TVPOA Land Use Data by Traffic Zone 09/15/95; Economic & Planning Systems, 1995.

TABLE 4.12-4
TRI-VALLEY EMPLOYMENT GROWTH BY PLANNING AREA - NO PROJECT

	19	990	20	010		1990-2010)
		Share of		Share of		Share of	Annualized
	Existing	Tri-Valley	Forecast	Tri-Valley	Job	Tri-Valley	Growth
Subarea	Jobs	Total	Jobs	Total	Growth	Growth	Rate
Danville	6,133	5.4%	8,282	3.7%	2,149	1.9%	1.5%
San Ramon	27,681	24.5%	44,183	19.7%	16,502	14.8%	2.4%
Dougherty Valley	0	0.0%	5,365	2.4%	5,365	4.8%	#N/A
Alamo/Blackhawk	1,772	1.6%	2,277	1.0%	505	0.5%	1.3%
Tassajara Valley	* 31	0.0%	31	0.0%	0	0.0%	0.0%
Other CCC	90	0.1%	90	0.0%	0	0.0%	0.0%
CCC Subarea	35,707	31.6%	60,228	26.8%	24,521	22.0%	2.6%
Dublin	11,163	9.9%	13,081	5.8%	1,918	1.7%	0.8%
East Dublin	445	0.4%	23,046	10.3%	22,601	20.3%	21.89
Pleasanton	28,363	25.1%	58,360	26.0%	29,997	26.9%	3.7%
Livermore	33,506	29.7%	50,843	22.7%	17,337	15.5%	2.19
North Livermore	2,574	2.3%	17,462	7.8%	14,888	13.3%	10.09
Other AC	1,093	1.0%	1,417	0.6%	324	0.3%	1.39
AC Subarea	77,144	68.4%	164,209	73.2%	87,065	78.0%	3.8%
Total Tri-Valley	112.851	100.0%	224,437	100.0%	111.586	100.0%	3.5%

^{*} No projected employment growth in Tassajara Valley exclusive of proposed TVPOA project.

Sources: TVTC Final Expected Growth Scenario, 05/03/95;
TVPOA Land Use Data by Traffic Zone 09/15/95; Economic & Planning Systems, 1995.

percent of the jobs. Only Pleasanton is projected to retain its current status, as new employment in the East Dublin and North Livermore Planning Areas is forecast to outstrip job growth in the other established Tri-Valley communities.

As shown on Table 4.12-5, the strongest employment sectors in the Tri-Valley are services at 45 percent, followed by the category called "other," at 38 percent (including construction; transportation, communications and utilities; finance, insurance and real estate; and government), and retail, at 17 percent. The prevalence of service employment in the fast-growing Tri-Valley communities is not surprising, as the services sector is growing throughout the Bay Area and tends to be population-serving.

Regional Housing Characteristics

Over the past ten years, the Tri-Valley housing market has been one of the fastest growing in the Bay Area. As shown on Table 4.12-6, between 1985 and 1995, the Tri-Valley's incorporated communities (Danville, San Ramon, Dublin, Pleasanton and Livermore) grew by about 25,300 housing units, or nearly 2,100 new units per year. More than 60 percent of this growth has been in single-family housing, with the remaining housing growth almost entirely accounted for by multi-family units. About 135 mobile homes were added to the region's housing stock over this period.

During the five-year period from 1985 to 1990, housing growth in the incorporated Tri-Valley averaged about 3,300 units per year. Due to the impact of the recent recession, for the five-year period from 1990 to 1995, housing growth in Tri-Valley cities and towns has averaged about 1,750 units per year. This represents a decrease of 47 percent from the previous five-year average. Growth of more affordable multi-family units (two or more attached units per structure) has been most adversely affected, declining by 54 percent from the previous five-year average (CDOF, 1992-1995).

While single-family housing predominates in the Tri-Valley market, with single-family units representing 63 percent of new housing in the major Tri-Valley communities, in recent years proportionately more multi-family units have been constructed. The percentage of multi-family homes in the Tri-Valley's incorporated cities and towns rose from 13 percent of total housing stock in 1985 to almost 20 percent of total housing stock by 1995.

Strong employment-driven demand and escalating land and housing prices in the Tri-Valley have caused residential growth to spill over into the San Joaquin Valley. Many Tri-Valley and other Bay Area employees now commute from Tracy, Manteca and Modesto, where single-family homes can be purchased at lower prices. The City of Pleasanton has recently reported about nine percent of Pleasanton workers commute from Central Valley locations (Pleasanton, 1993).

There are four principal product types in the Tri-Valley residential market: single-family detached, single-family attached (including zero-lot line and townhouses), condominiums and apartments. The market for each is described below.

TABLE 4.12-5
1990 TRI-VALLEY EMPLOYMENT BY INDUSTRIAL SECTOR

		Employment by I	ndustry Sector	
Subarea	Retail	Service	Other	Total
Danville	1,949	2,948	1,236	6,133
San Ramon	2,714	11,744	13,223	27,681
Dougherty Valley	0	0	0	0
Alamo/Blackhawk	613	499	660	1,772
Tassajara Valley	0	3	28	31
Other CCC	0	0	90	90
CCC Subarea	5,276	15,194	15,237	35,707
Dublin	3,987	3,546	3,630	11,163
East Dublin	0	0	445	445
Pleasanton	6,627	18,718	3,018	28,363
Livermore	3,715	9,612	20,179	33,506
North Livermore	0	2,551	23	2,574
Other AC	61	1,031	1	1,093
AC Subarea	14,390	35,458	27,296	77,144
Total Tri-Valley	19,666	50,652	42,533	112,851
		Job Distribution by	Industry Sector	
Danville	32%	48%	20%	100%
San Ramon	10%	42%	48%	100%
Dougherty Valley	0%	0%	0%	0%
Alamo/Blackhawk	35%	28%	37%	100%
Tassajara Valley	0%	10%	90%	100%
Other CCC	0%	0%	100%	100%
CCC Subarea	15%	43%	43%	100%
Dublin	36%	32%	33%	100%
East Dublin	0%	0%	100%	100%
Pleasanton	23%	66%	11%	100%
Livermore	11%	29%	60%	100%
North Livermore	0%	99%	1%	100%
Other AC	6%	94%	0%	100%
AC Subarea	19%	46%	35%	100%
Total Tri-Valley	17%	45%	38%	100%

Sources: TVTC Final Expected Growth Scenario, 05/03/95; TVPOA Land Use Data by Traffic Zone 09/15/95; Economic & Planning Systems, 1995.

TABLE 4.12-6

1985-1995 GROWTH IN HOUSING UNITS: TRI-VALLEY INCORPORATED AREAS

Housing Type	Growth 1985 to 1990	Growth 1990 to 1995	Total 1985 to 1995	Annual Growth 1985 to	Annual Growth 1990 to 1995	Annual Growth 1985 to	Distri- bution 1985 to	Distri- bution 1990 to 1995	Distribution 1985 to 1995
Single Family Multi Family Mobile Homes	10,270 6,277 94	5,798 2,910 40	16,068 9,187 134	2,054 1,255 19	1,160 582 8	1,607 919 13	62% 38% 1%	66% 33% 0%	63% 36% 1%
Total Growth	16,641	8,748	25,389	3,328	1,750	2,539	100%	100%	100%

Sources: California Department of Finance, Demographic Research Unit, 1992-1995; Economic & Planning Systems, 1995.

Single-Family Detached

Depending on location, lot size and size and character of construction, there are large variations in the price of Tri-Valley detached homes. At the upper end, such as the Alamo/Blackhawk community located northeast of the proposed project area, the average owner-reported home value in the 1990 Census was over \$500,000. Traditional two-parent families tend to be the primary consumer group for detached homes. These generally consist of both trade-up buyers, seeking larger or more valuable homes, and first-time buyers, seeking less expensive homes (\$240,000 to \$275,000). The market for larger units is likely to be strong, as "baby-boomers" move up through the housing market during their prime earning years, and the demand for entry-level ownership housing is likely to remain strong as workers in their late 30s and early 40s build their savings and move into home ownership.

Single-Family Attached

This product type is developed in many configurations, including zero-lot line homes and clusters of two-to-six units, or "townhouses." All units in this category, except the zero-lot line, share a common wall. Zero-lot line homes on separate lots must include a fire wall between units to meet building code standards. The floor plans of attached homes are comparable to many detached homes, but smaller lots allow developers to market this product at a lower price. The market for attached housing consists of first-time buyers (singles and small families) and empty-nesters (singles or older couples whose children have left home).

Condominiums

The Tri-Valley experienced a wave of condominium development in 1984 and 1985. These units were not particularly well-received in the marketplace, many being purchased by investors who rented them out, further diminishing the appeal of the product to owner-occupants. Newer condominium projects are generally being placed on the market as rental complexes. Because these units are built at a higher quality than typical apartments, however, owners may convert them to for-sale units in the future if the market improves. Condominiums appeal generally to small, childless households, including singles, couples and empty nesters, and to investors in rental real estate.

Apartments

The market for new apartment complexes in the Tri-Valley is driven largely by its growing employment base. New complexes near the Hacienda Business Park in Pleasanton have been extremely successful. In the past, about 30 percent of the occupied apartments were used as executive suites, rented by employers to provide accommodations for transferring employees and personnel on temporary assignments. The recent recession reduced this market segment to around 25 percent of the overall apartment market. Other principal apartment dwellers include singles, young couples saving for their first home purchase, single-parent families and empty nesters.

Regional Non-Residential Development Characteristics

Prior to 1980, the Tri-Valley was primarily a collection of bedroom communities whose residents worked principally in San Francisco and the East Bay. During the 1980s, the Tri-Valley emerged as a major suburban office location. By the early 1990s, over 4.6 million square feet of commercial building space had been developed in Hacienda Business Park in Pleasanton and over 5.1 million square feet had been built in Bishop Ranch in San Ramon, the region's primary office parks. Anchored by these two developments, the cities of Pleasanton and San Ramon have become focal points for Tri-Valley employment growth, providing suburban locations for major employers moving out of San Francisco and other established areas. Access to housing and labor force drove commercial development and job growth in the Tri-Valley region. Growth in retail outlets and commercial services have kept pace with the growing population and business base.

The market for office, industrial, region-serving retail space in the Tri-Valley is now relatively saturated. The region contains a considerable supply of level land zoned for future commercial and industrial development, with ready access to the I-580/I-680 corridors. An abundance of existing vacant space and approved future space in Hacienda Business Park, Bishop Ranch and other business parks has created a highly competitive market for commercial tenants. The shopping needs of Tri-Valley residents and commuters are already well-served by Stoneridge Mall, the regional shopping center in Pleasanton, and a well-developed set of subregional shopping centers. These already established shopping areas are not yet fully built out, and have the potential to absorb a significant amount of future demand for region-serving retail space.

Regional Jobs/Housing Balance

The ratio of employed residents (409,865) to jobs (277,122) in 1990 was significantly higher for Contra Costa County as a whole, at 1.48, than it was for the Tri-Valley region, at 1.08 (122,350 employed residents to 112,851 jobs), as shown on Table 4.12-7. These figures suggest a better balance between employed residents and jobs in the Tri-Valley region than in the County as a whole. When the employed residents to jobs ratios are calculated independently for the Contra Costa and Alameda County portions of the Tri-Valley, it becomes evident that the Contra Costa County portion serves as more of a Bay Area bedroom community than does the Alameda County portion.

TABLE 4.12-7
EXISTING JOBS/HOUSING BALANCE - 1990

Contra Costa County, Tri-Valley and Tassajara Valley Study Area

	Households	Employed Residents	Jobs	Households per Job	Employed Residents per Job
Tassajara Valley Study Area (1)	119	217	31	3.84	7.00
Contra Costa County Subarea of Tri-Valley	30,880	49,381	35,707	0.86	1.38
Total Contra Costa County	304,718	409,865	277,122	1.10	1.48
Alameda County Subarea of Tri-Valley	47,506	72,969	77,144	0.62	0.95
Total Tri-Valley	78,386	122,350	112,851	0.69	1.08

¹ Tassajara Valley Study Area includes TVPOA project site, proposed 250-unit non-TVPOA residential project, and adjacent Transportation Analysis Zone 247.

Sources: TVTC Final Expected Growth Scenario, 05/03/95; TVPOA Land Use Data by Traffic Zone 09/15/95; Economic & Planning Systems, 1995.

Characteristics of Existing Residents and Housing at the Project Site

Most existing housing in the project area is clustered in its northeast portion. It is considered by the project applicant to be compatible with the proposed development, and is assumed capable of being either retained or replaced in the total of 5,950 dwelling units at buildout (TVPOA, 1995). For those 95 households currently residing within the proposed project site, housing value and tenure characteristics are assumed to be similar to tract averages; no independent survey of the actual on-site housing has been conducted.

Census data indicate that about 93 percent of the units are owner-occupied, with the median owner-reported home value at about \$500,000, and median monthly contract rent at \$1,000, in 1989 dollars.

Median household income was \$118,000 in this tract, while County median income was \$45,000, in 1989 dollars.

County Housing Goals and Policies

In the General Plan adopted in July 1996, the County committed itself to a set of goals, policies and action programs to increase its supply of housing affordable to low- and moderate-income people. The plan repeatedly affirms the County's commitment to help meet the housing needs of all income groups, present and future. Toward this end, the County has in place a large number of programs that are specifically targeted to assist in the production costs as well as consumer costs for low- and moderate-income housing. The relevant goals, policies and implementation measures are quoted below.

Land Use Element

- Goal 3-K "To develop a balance between job availability and housing availability with consideration given to wage levels, commute distance and housing affordability. . . . "
- Goal 3-L "To safeguard the County's obligations to provide its fair share of safe, decent affordable housing."
- Policy 3-4 "Financing mechanisms shall be developed which spread the cost of facilitating jobs/housing balance between existing and new development."
- Policy 3-7 "The location, timing and extent of growth shall be guided through capital improvements programming and financing (i.e., a capital improvement program, assessment districts, impact fees and developer contributions) to prevent infrastructure, facility and service deficiencies."
- Policy 3-21 ". . . Multiple-family housing shall be dispersed throughout the County and not concentrated in single locations. Multiple-family housing shall generally be located in proximity to facilities such as arterial roads, transit corridors, and shopping areas."
- Policy 3-22 "Housing opportunities for all income levels shall be created. Fair affordable housing opportunities should exist for all economic segments of the County."
- Policy 3-23 "A diversity of living options shall be permitted while ensuring community compatibility and quality residential development."
- Implementation 3-g "Adopt land use regulations which allow mixed use developments as a mechanism for achieving a jobs/housing balance."
- Implementation 3-h "Require staff reports on development applications for residential developments of 100 or more units to address the impact of that development upon the subregional jobs/housing balance."

- Implementation 3-j "Provide incentives to encourage the construction of affordable housing in areas where few such opportunities exist and significant employment centers exist or are proposed."
- Implementation 3-v "To the extent legally permitted, advise LAFCO to . . . require unincorporated land located within the Urban Limit Line . . . to provide a fair share of affordable housing when and if such land is developed."

Housing Element

- Goal 1 "To provide housing to meet the present and future needs of residents in the County of Contra Costa, and to aim to provide a fair share of the market area housing needs, within identified governmental, market, economic and natural constraints."
- Goal 2 "To provide housing to meet the needs of all income groups in the county, and to provide the fair share allocations by income category within the identified governmental, market, economic and environmental constraints."
- Goal 4 "To address the housing needs of senior citizens, physically disabled, homeless, large families, farm workers and female-headed households."
- Program objective 1.1 "To expedite and support the development of market-rate and non-market rate housing."
- Program objective 1.3 "To increase production of second units as an affordable housing alternative."
- Program action 2.0

 "Direct private and non-profit housing developers to [the] County for

 ... HOME and CDBG Program funds. Where applicable, use County
 Redevelopment Agency set-aside funds. Program funds can be used to
 facilitate new development and special housing needs for very-low and
 low income households by financing predevelopment, site acquisition,
 site improvements and by providing first-time home buyer assistance."
- Program action 2.4 "Discretionary waiving of all or a portion of planning fees for nonprofit developers of projects affordable to very-low- and low-income households."
- Program action 2.5 "Undertake County MCC [Mortgage Credit Certificate] Program to enhance the affordablity of both new and existing homes for first-time low- to moderate-income home buyers . . . "

- Program action 2.6 "Promote the utilization of the County's density bonus. The ordinance specifies that a developer shall be granted a bonus of at least 25 percent, and an additional incentive, for the provision of 20 percent of the units for lower-income households, or 10 percent for very-low-income households, or 50 percent of the units for senior citizens."
- Program action 2.12 "Large-scale residential projects requesting a Vesting Development Agreement should provide a minimum of 25 percent of the units for moderate income households, or 10 percent for low income. . . ."
- Program objective 2.12 "To increase the supply of affordable housing and to encourage the development of mixed-income housing."

Dougherty Valley Specific Plan

The Dougherty Valley Specific Plan, adopted by Contra Costa County in January 1993, contains the following policies with respect to affordable housing:

- Policy H-3: Provide for a strong, affordable single-family and multiple-family housing program for a wide range of household income levels
- Policy H-4: Develop a minimum of 25 percent of all dwelling units as affordable to low, very-low and moderate income households as defined by the County.
- Policy H-5: Provide for the development of higher residential densities to increase housing opportunities for diverse income groups.
- Policy H-6: Accompanying the initial final development plan/tentative map submittal, there shall be a phasing plan to indicate the delivery of affordable housing.
- Policy H-7: Each phase established shall be subject to an inclusionary housing requirement. A minimum of 15 percent of the units in each phase shall be developed as affordable units (i.e., no more than 40 percent of an individual phase's 'affordable housing obligation' may be passed forward to future development). In no case shall the affordable housing obligation for future phases be increased to exceed 50 percent of the number of planned units. One phase may omit affordable housing but those affordable units must be picked up in the next phase being applied for.
- Policy H-8: The use of an in lieu affordable housing fee to secure relief from the requirement to deliver affordable housing is expressly prohibited.
- Policy H-9: Encourage and promote owner occupied housing, especially for affordable units. Affordable units shall be maintained for the maximum period feasible. Target periods

shall be a minimum of twenty years for for-sale units and thirty years for rental units. Speculative activities relating to affordable units will be discouraged.

Policy H-10: Encourage the development of innovative single-family and multiple-family higher density housing which addresses housing affordability needs.

Policy H-11: Provide for the development of senior housing within Dougherty Valley.

Proposed Project Land Use

Table 4.12-8 summarizes planned residential land uses and the projected residential holding capacity of the proposed project, as examined in this analysis. The numbers of households and population shown in Table 4.12-8 differ from those appearing in the applicant's PUD Plan (Table 3-2) and from the assumptions used in the transportation analysis. This results from the fact that, for the jobs/housing analysis, the average rates assumed for occupancy (95.0 percent) and persons per household (2.9) are consistent with averages used in the Tri-Valley traffic model developed for Contra Costa County. The totals of 5,653 households and 16,283 persons derived from these averages were then distributed proportionally among housing types to match the distributions in the applicant's Final Growth Scenario (5/3/95).

Proposed Residential Development

Single-family residential development on the project site would include a total of 5,950 dwelling units at median densities ranging from 0.20 to 20.9 dwellings per acre. According to the proponent's *Development Unit Count Map* of August 4, 1995, 3,853 of these units are proposed as single-family dwellings of various densities, 1,375 as multi-family units of low and medium densities, and 722 units as attached or upper-story units which would be combined with commercial and/or office space and located mostly in mixed-use village centers (see Table 4.12-8).

Outside the TVPOA project area, but on land directly adjacent to the northwest corner of the project, an additional 250 dwellings have been proposed as Single-Family Residential High Density units. These non-TVPOA units have been considered a part of the 'No Project' baseline growth projection for this analysis, and all impacts discussed below are for the 5,950 TVPOA units.

As shown on Table 4.12-9, the applicant's previous market analysis indicated that housing types and average prices in the project area would range from \$152,000 for "mixed use" housing to \$565,000 for custom homes on lots in the lowest density areas, in 1993 dollars (Hurt, 1993). The type and price range assumptions have been retained for this analysis after a check on general reliability with Anthony Hurt & Associates (personal communication, Anthony Hurt, October 1995), as detailed substitutes are not defined in the applicant's design guidelines or planned unit district plan.

TABLE 4.12-8
PROPOSED PROJECT LAND USE SUMMARY

Land Use Designation	Gross Acres		Dwelling Units	Households	Population	Employed Residents
Residential:						
Single Family Very Low (SV)	383		144	137	490	220
Single Family Low (SL)	134		291	278	961	444
Single Family Medium (SM)	667		2,451	2,338	8,100	3,741
Single Family High (SH)	179		967	922	2,663	1,476
Multi Family Low (ML)	71		511	487	1,126	780
Multi Family Medium (MM)	72		864	816	1,697	1,305
Mixed Use (Village Center)		(1)	722	675	1,247	1,079
Total Residential	1,506	(1)	5,950 (2)	5,653	16,283	9,045
Village Center:				Square Feet		
Mixed Use	68	(1)				
Commercial/Office				300,000		
Residential (See Note)		(1)				
Total Village Center				300,000		
Total Residential Acres	1,574					

	Occupancy	(3) Person/HH (3	3) Worker/HH	Maximum D.U./Net Acre
Single Family Very Low (SV)	95.4%	3.6	1.6	0.5
Single Family Low (SL)	95.4%	3.5	1.6	2.9
Single Family Medium (SM)	95.4%	3.5	1.6	4.9
Single Family High (SH)	95.4%	2.9	1.6	7.2
Multi Family Low (ML)	95.4%	2.3	1.6	9.0
Multi Family Medium (MM)	94.4%	2.1	1.6	15.0
Mixed Use (Village Center)	93.4%	1.8	1.6	#N/A
PUD Average	95.0%	2.9	1.6	

¹ Residential coverage in Mixed Use designated areas is included in Mixed Use total.
Proposed mixed use development may include high-density residential use and non-residential uses on same sites.

Sources: TVTC Final Expected Growth Scenario, 05/03/95; TVPOA Land Use Data by Traffic Zone 09/15/95; Economic & Planning Systems, 1995.

² Excludes projected growth in Tassajara Valley outside proposed TVPOA project: 250 D.U. @ .95 occupancy = 238 HH.

³ Rates assumed for occupancy are lower and for persons per occupied dwelling are higher than described in TVPOA PUD Plan; proportional adjustments made to match TVTC Final Growth Scenario (5/3/95) and Barton-Aschman Data by TAZ (09/15/95)

TABLE 4.12-9
PROPOSED PROJECT HOUSING PRODUCT TYPES AND PRICES

Land Use Designation	Product Type	Dwelling Units	House- holds (2)	Distri-	Average Price (1993 \$) (4)	Average Price (1990 \$)
SF Very Low (SV)	Custom Lots	144	137	2.4%	\$565,000	\$513,374
SF Low (SL)	Rural Lots	291	278	4.9%	\$465,000	\$422,511
SF Medium (SM) A	Estate Lots	709	676	12.0%	\$420,000	\$381,623
SF Medium (SM) B	Estate Lots	817	779	13.8%	\$367,000	\$333,466
SF Medium (SM) C	Estate Lots	925	883	15.6%	\$320,000	\$290,760
SF High (SH)	Conventional Lots	967	922	16.3%	\$275,000	\$249,872
MF Low (MV)	Cottage Lots	511	487	8.6%	\$235,000	\$213,527
MF Medium (MM)	Cluster Homes	864	816	14.4%	\$175,000	\$159,010
Mixed Use	Mixed Use	722	675	11.9%	\$152,000	\$138,111
Total PUD	(1)	5,950	5,653 (3)	100.0%	\$295,336	\$282,448

- 1 Totals may differ slightly from aggregate cell estimates, due to round-off.
- 2 Average residential vacancy rate assumed equal to 5.0 percent (Barton-Aschman Associates, 1995).
- 3 Tassajara Valley Study Area has 119 existing households; 95 in Project Plan Area and 24 outside: assumed Tassajara Valley Study Area buildout capacity = 5,915 total households, of which 5,653 would be located within the PUD area.
- 4 Housing product pricing and type assumptions based on Anthony Hurt & Associates Tri-Valley market analysis of October, 1993; Hurt & Associates contacted by EPS in October 1995 to confirm pricing assumptions remain valid; Project housing product characteristics described only generally in Tassajara Design Guidelines, August 11, 1995.

Sources: Anthony Hurt & Associates, 1993; TVPOA, 1995; Economic & Planning Systems, 1995.

The applicant's design guidelines list cluster homes, zero lot line homes, duettes, townhouses, condominiums and apartments as "compatible" with mixed-use development (TVPOA, 1995), and these may provide some "affordable" housing for owners or renters in higher density areas. The applicant's Planned Unit District Plan (11/15/95, p. 58-59) states: "Even the homes in hillside areas can supply affordable housing. As one option, they can do so by including granny flats, au pair quarters, and other second units when developing." The addition of secondary units after the development plan is approved could result in neighborhood densities in excess of those approved by the County and would not enable the County to ensure that the goals for "affordable" housing are being met.

The applicant's "Proposed Phasing" plan for the project (Revised 8/4/95) indicates that it could be developed in four phases, starting in the northwest portion of the plan area and progressing toward the southerly limits, with the fourth and final phase in the northeast sector, which contains the homes presently existing in the area (TVPOA, 1995). A tentative distribution of units by product type within each development phase is shown in Table 4.12-10. (See Table 3-4, Development by Phases.)

Proposed Non-Residential Development

At buildout, planned non-residential uses for the proposed project would include 300,000 square feet of commercial space, primarily located in the planned mixed-use village centers (Table 4.12-8). This space is projected to support on-site employment of about 610 workers at buildout. Consistent with the essentially residential nature of the proposed project, most on-site employment may be expected to be local-serving. The majority of employees forecast for the proposed project are expected in the retail and service sectors (Table 4.12-11), as is the case for the entire Tri-Valley under the Expected Growth Scenario. "Other" employment on-site might include banks and financial institutions, a post office, or other small quasi-office tenants consistent with the County's Commercial/Office (CO) zoning districts (TVPOA, 1995).

IMPACTS AND MITIGATION MEASURES

Introduction

Impacts and mitigation measures relating to population, housing, and employment are described in this section for the Tassajara Valley, the Tri-Valley region and the Contra Costa and Alameda County subregions. The focus of the analysis is on specific impacts related to the proposed project plan, based on housing production, population and employment growth, and jobs-to-housing ratios. Issues include:

- Whether the proposed project would represent a significant new concentration of population or employment;
- Whether the proposed supply of housing would be in balance with expected employment growth; and
- Whether the additional housing proposed in the Tassajara Valley would be affordable to persons employed locally and elsewhere in the Tri-Valley region and Contra Costa County.

TABLE 4.12-10

DWELLING UNITS BY HOUSING TYPE, DENSITY, AVERAGE COST AND DEVELOPMENT PHASE

Land Use Designation	Product Type	Housing Density	Average Price (1993 \$)	Phase 1 Units	Phase 2 Units	Phase 3 Units	Phase 4 Units	TOTAL Units
SF Very Low (SV)	Custom Lots	0.2 - 0.9	\$565,000	19	11	22	92	144
SF Low (SL)	Rural Lots	1.0 - 2.9	\$465,000	152	138	0	0	290
SF Medium (SM)	Estate Lots	3.0 - 4.9	\$364,594	1,342	734	375	0	2,451
SF High (SH)	Conventional Lots	5.0 - 7.2	\$275,000	643	324	0	0	967
MF Low (ML)	Cottage Lots	7.3 - 11.9	\$235,000	258	253	0	0	511
MF Medium (MM)	Custom Homes	12.0 - 20.9	\$175,000	333	155	376	0	864
Mixed Use (MU)	1 Mixed Use	12.0 - 20.9	\$152,000	309	414	0	0	723
Total PUD	2			3,056	2,029	773	92	5,950
Average Cost by Phase				\$298,887	\$284,182	\$278,076	\$565,000	\$295,283

¹ Residences are planned for development in Mixed Use areas, above or adjacent to Commercial, Office and Public uses. It has been assumed any of the 68.4 acres planned for mixed use development may be available for residential uses. In these areas, the densities suggested in the Design Guidelines correspond to the County's MF Medium use designation. According to TVPOA Design Guidelines, the mixed use dwellings may include attached and closely-spaced detached housing typically associated with high-density development.

Sources: Anthony Hurt & Associates, 1993; TVPOA, 1995; McDonald & Associates, 1995; Economic & Planning Systems, 1995.

² Phase allocations per Angus McDonald & Associates, 11/14/95. Phase unit totals and distributions by type are consistent with buildout by year 2015, as is assumed for transportation demand modeling.

TABLE 4.12-11

TASSAJARA VALLEY JOBS AND EMPLOYED RESIDENTS AT PROJECT BUILDOUT

Employment in Tassajara Valley at Buildou	t		Employed Res	idents at Buildou	t
Employment Sector	Jobs	House- holds	Employees per Household	Total Employed Residents	Employed Residents per Job
Project Plan Area					
Retail	420				
Service	119				
Other	71				
Subtotal, Project Plan Area	610	5,653	1.6	9,045	14.8
Rest of Tassajara Valley Study Area					
Retail					
Service					
Other	0				
Subtotal, Rest of Tassajara Valley	0	262	1.6	418	#N/A
Tassajara Valley at Buildout	610	5,915	1.6	9,464	15.5

Sources: TVTC Final Expected Growth Scenario, 05/03/95; TVPOA Land Use Data by Traffic Zone 09/15/95; Economic & Planning Systems, 1995.

Significance Criteria

Appendix G of the CEQA Guidelines contains a list of the criteria to be used in determining whether a project may have a significant impact on the environment. For purposes of this section, the project would have a significant impact if it would:

- a) Conflict with adopted environmental plans and goals of the community where it is located;
- b) Induce substantial growth or concentration of population; or,
- c) Conflict with the affordable housing policies adopted in the Contra Costa County General Plan and the Contra Costa County General Plan.

Although jobs/housing imbalance impacts are not considered to be significant under CEQA guidelines, they are matters of importance according to the County *General Plan* (County, 1996) and can lead to other environmental impacts, such as traffic congestion, air quality deterioration and noise impacts.

Housing affordability is not a CEQA-mandated environmental issue, but it is specifically identified in the policies of the *Contra Costa County General Plan* (County, 1996). There are also important interrelationships of housing affordability to the jobs/housing balance and CEQA-mandated issues of traffic, air quality and energy use.

All impacts are considered significant adverse impacts unless identified otherwise. The corresponding mitigation measure(s), unless noted otherwise, would be sufficient to reduce the impact to a less-than-significant level.

Population and Employment Growth

Impact 4.12-1 Project buildout would result in substantial addition to the population of the Tri-Valley and Contra Costa County, of about 5,683 households, or 15,987 residents. This is a less-than-significant impact.

The project will generate significant growth of population and employment within the Tri-Valley, and particularly within the Contra Costa County portion of the Valley. The project's land use plan calls for 5,950¹ dwelling units, which implies that 5,683 new households and 15,987 new residents would be added to the 95 existing households and 296 existing residents in the project plan area in 1990. While most existing Tassajara Valley housing units are in the project plan area, a few are immediately east of the project plan area. If the project is built out by 2010, as assumed for this analysis, the new households generated by the project will represent 24 percent of the household growth and 27 percent of the population growth projected for the Tri-Valley portion of Contra Costa County. The project will represent about five percent of household growth and about seven percent of the population growth in Contra Costa County as a whole. Table 4.12-12 shows the impact of the proposed project in terms of growth of households, population, and employed residents, as well as jobs.

In general, population and housing growth in and of itself does not generate an environmental impact; it is only the demand for services, the activities of this growth, and other natural resources used by this growth that generates environmental impacts. The potential demand for affordable housing that would be generated by the project is also considered as a potential impact in this EIR.

Mitigation Measure

4.12-1 No mitigation measure is required or recommended.

The project's dwelling unit count excludes projected growth in the Tassajara Valley outside the proposed project boundary.

TABLE 4.12-12

IMPACT OF THE PROPOSED PROJECT

on Contra Costa County, Tri-Valley and Tassajara Valley 1990-2010

	Households		Population	Employed Residents	Jobs	
Tassajara Valley PUD Area - 1990	95	[1]	296	173	21	
CCC Tri-Valley Subarea - 1990	30,880		90,199	49,381	35,707	
Total Contra Costa County - 1990	304,718		784,634	409,865	277,122	
Total Tri-Valley -1990	78,386		228,188	122,350	112,851	
Tassajara Valley PUD Area - 2010	5,653	[1]	16,283	8,328	600	[:
CCC Tri-Valley Subarea - 2010	53,966		149,433	87,289	60,807	
Total Contra Costa County - 2010	409,789		1,005,534	554,122	402,216	
Total Tri-Valley - 2010	144,100		385,859	224,342	225,016	
Tassajara Valley PUD Area Growth	5,558		15,987	8,155	579	[:
CCC Tri-Valley Subarea Growth	23,086		59,234	37,908	25,100	
Total Contra Costa County Growth	105,071		220,900	144,257	125,094	
Total Tri-Valley Growth	65,714		157,671	101,992	112,165	
Project Area Growth as Percent of CCC Tri-Valley Subarea Growth	24.1%		27.0%	21.5%	2.3%)
Project Area Growth as Percent of Total Contra Costa County Growth	5.3%		7.2%	5.7%	0.5%)
Project Area Growth as Percent of Total Tri-Valley Growth	8.5%		10.1%	8.0%	0.5%)

¹ Of the 119 existing households within the Tassajara Study Area, 95 are in the Project PUD Area and 24 are outside. Project Buildout assumes 5,683 households for Project Plan Area and 5,915 households for total Tassajara Study Area; Buildout of 250 non-TVPOA units (238 households) adjacent to Project is excluded from impacts allocated to Project.

Sources: TVTC Final Expected Growth Scenario, 05/03/95; TVPOA Land Use Data by Traffic Zone 09/15/95; Economic & Planning Systems, 1995.

² No post-1990 jobs projected for the Tassajara Valley Study Area, exclusive of the Project; buildout of the Project by 2010 would add 579 net new jobs to the Tassajara Valley Study Area.

Impact 4.12-2 Project buildout would add an additional 579 jobs in Contra Costa County and the Tri-Valley. This is a less-than-significant impact.

The project plan calls for 300,000 square feet of commercial/office space. The estimated employment capacity in the project plan area would be about 600 jobs at buildout, or 579 more than existed in 1990 (Table 4.12-12). This figure represents only a small percentage of the overall employment forecast for the Tri-Valley portion of Contra Costa County, about 2.5 percent of the 25,100 new employees projected for this area. Employment growth in the Tassajara Valley would represent only about one-half of one percent of the projected increase in jobs in the Tri-Valley region. This is not considered a significant impact. Mitigations for the physical changes that would result from employment growth are identified elsewhere in this Draft EIR (e.g., Section 4.5, Traffic and Circulation).

Mitigation Measure

4.12-2 No mitigation measure is required or recommended.

Impact 4.12-3 By increasing the resident labor force, the proposed project would reduce a projected labor force shortfall in the Tri-Valley. This is a beneficial impact.

Population serving employment is an unavoidable impact of housing growth and concentration. Under Policy 32 of the *Contra Costa County General Plan*, commercial areas of appropriate size and location to serve present and anticipated community populations must be provided in each community of the County.

Future economic development of the Tri-Valley may be constrained by the capacity of the eastern/northeastern gateway to carry in-commuting labor force from the Central Valley and the Pittsburg, Brentwood, and Antioch areas. The proposed project could alleviate this external constraint to some degree, by providing more housing for labor force inside the Tri-Valley. Section 4.5 of the Draft EIR, the Traffic and Circulation section, examines transportation constraints in detail. Technical Appendix G documents the assumptions used in this analysis, as well as a separately bound document that presents additional background material and documents the computer model methodologies applied in this analysis, which is on file at the Contra Costa County Community Development Department, Fourth Floor, Martinez, California.

If planned future improvements are assumed to be funded and completed by 2010, Tri-Valley roadways could carry approximately 74,250 daily in-commuters, as shown on Table 4.12-13. This capacity may be inadequate, as the projected demand for in-commuting employees in 2010 is more than the aggregate potential roadway capacity, with or without project implementation. As shown on Table 4.12-13, without the project, demand for in-commuters will be 86,000. With the project, demand for in-commuters will be 81,400. Given the variation in the commute demand and capacity at individual gateways, the projected shortfall in in-commuting workers is expected to be greater than the simple difference between overall demand and capacity, with some gateways constraining access to external labor supply. This simple, order-of-magnitude analysis assumes a realistic match of Tri-Valley jobs and wages to the expected distribution of future housing and workers outside the region.

TABLE 4.12-13

POTENTIAL TRANSPORTATION SYSTEM CONSTRAINTS ON EMPLOYMENT GROWTH:

Year 2010 - No Project and Year 2010 With Project

Gateway	Highway Trip Capacity (1) Available to		Distribution of ommute Dem	Potential Employment Unrealized (4)		
	Tri-Valley Workers	Percent of Demand (2)	2010 No Project	2010 With Project	2010 No Project	2010 With Project
From East/N-E						
1-580	14,125	29%	25,247	23,894	11,122	9,769
Vasco	5,125	11%	9,161	8,670	4,036	3,545
Subtotal	19,250	40%	34,408	32,564	15,158	13,314
From North 1-680	20,250	20%	17,204	16,282	0	C
From West						
I-580	14,875	15%	13,124	12,420	0	C
Dublin Canyon	2,500	3%	2,206	2,087	0	C
Crow Canyon	2,125	2%	1,875	1,774	0	C
Subtotal	19,500	20%	17,204	16,282	0	C
From South						
1-680	12,875	17%	14,525	13,746	1,650	871
Niles	2,375	3%	2,679	2,536	304	161
Subtotal	15,250	20%	17,204	16,282	1,954	1,032
Roadways Total	74,250	100%	86,020	81,410	17,112	14,346

¹ Worker trips through gateways.

Sources: TVTC Final Expected Growth Scenario, 05/03/95; TJKM 1989; Barton-Aschman Associates, 1995; Economic & Planning Systems, 1990, 1994 and 1995.

² East/NE Gateway assigned 40% of total demand, based on projected lower housing costs in Central Valley and Pittsburg/Antioch/Brentwood areas.

³ Projected rail transit capacity for 9,000 in-commuters has been deducted from estimated total demand.

⁴ These order-of-magnitude estimates neither replace nor represent a rigorous transportation analysis.

The maximum estimated capacity of the eastern/northeastern gateway to the Tri-Valley will be 19,250 in-commuters, while projected demand for in-commuters through that gateway by 2010 will be 34,400 without the project and 32,564 with the project. This and similar transportation constraints could result in a Tri-Valley labor force shortfall of about 17,100 workers by 2010 without the project, and a smaller shortfall of 14,350 workers with the project.

By increasing available Tri-Valley labor force, the proposed development in the Tassajara Valley could reduce the region's potential labor force shortfall caused by gateway transportation constraints by as much as 16 percent, or 2,750 jobs. This assumes that 60 percent of all future workers residing in the Tassajara Valley would seek and could find Tri-Valley jobs matching their skills and income needs. The percent of workers residing locally is expected to increase from 48 percent in 1980 to approximately 60 percent by 2010. Increasing Tri-Valley employment opportunities and the expected increase in traffic congestion will attract Tri-Valley households to local jobs (Cervero, 1987). This is a beneficial impact. (Refer to separately bound document on file with the County for more detail.)

Mitigation Measure

4.12-3 No mitigation measure is required or recommended.

Housing Production

Impact 4.12-4 The proposed 5,950-unit project will increase existing households by 5,558 at buildout, and would comprise nearly nine percent of the 1990-2010 projected growth within the Tri-Valley region and over five percent of the 1990-2010 projected growth within Contra Costa County. This is a less-than-significant impact.

The 5,950 total dwelling units proposed for buildout of the project site could provide shelter to about 5,558 new households in the Tassajara Valley (see Table 4.12-12). The project site is large enough to support a wide range of product types, as proposed in the *Planned Unit District Plan* and *Design Guidelines* prepared by the applicant. Thirty-five percent of the project's units are multi-family, and sixty-five percent are single-family. The project's size is conducive to the kind of master planning needed to create a cohesive community setting, and to adequately address issues of infrastructure planning and financing. The latter will be crucial in determining overall financial feasibility and market position for the proposed project.

The project will provide housing for projected population growth and for workers projected for the Tri-Valley. This additional supply of housing would be a beneficial impact.

Mitigation Measure

4.12-4 No mitigation measure is required or recommended.

Jobs/Housing Balance

Impact 4.12-5 The proposed project would result in an improved balance between jobs and housing in both the Tri-Valley region and Contra Costa County. This would be a beneficial impact.

With or without the project, the jobs/housing balance in Contra Costa County is expected to improve by the year 2010. As shown in Table 4.12-14, the ratio of jobs to households for the County as a whole is expected to move from 0.91 in 1990 to 0.99—almost a perfect balance in number—without the project, and to 0.98 with the project.

For the Tri-Valley region, if the project is not built by 2010, the ratio of jobs to households would decline from 1.44 to 1.62, as new jobs are expected to be created faster than new housing. If the project is built, the ratio would still decline, but not as far, only to 1.56. Thus, the project would have a beneficial impact on both Contra Costa County and the Tri-Valley region with regard to jobs/housing balance.

Mitigation Measure

4.12-5 No mitigation measure is required or recommended.

Housing Affordability

Impact 4.12-6 The project would increase the over-supply of units priced at the middle and upper income ranges, beyond expected demand for the Tri-Valley region as a whole, by more than 5,300 units and would increase the deficit of housing needed for lower-income households generated by project area employment by about 150 units.

The project area's employment would generate a need for shelter for about 371 households formed by local employees. As outlined on Table 4.12-15, the very-low-income category accounts for 79 households and the low income category for 70 Tassajara Valley households, at buildout. Together, the two lower-income categories account for 149 households or about 40 percent of the total housing need generated by project area employment. Moderate-income households are estimated at 91, or 25 percent of total housing need. Households with above moderate incomes account for the remaining 35 percent of total demand, or 171 households.

None of the new units in the project plan would be affordable to very-low- or low-income households. The supply of housing affordable to moderate and above moderate-income households (income above \$35,300) formed by additional project-generated workers, however, is expected to exceed demand by 1,387 and 3,948 units respectively, for a total of 5,333 housing units in excess of job-generated demand

TABLE 4.12-14

JOBS/HOUSING BALANCE - 1990 & 2010

Tassajara Valley, Contra Costa County and Tri-Valley Region - No Project & With Project

	1990 - Jobs	Existing Households	•		With Project Households	
Tassajara Valley Study Area	31	119	31	357	610	5,915
CCC Tri-Vailey Subarea	35,707	30,880	60,228	48,408	60,807	53,966
Total Contra Costa County	277,122	304,695	401,637	404,231	402,216	409,789
AC Tri-Valley Subarea	77,144	47,506	164,209	90,134	164,209	90,134
Total Tri-Valley	112,851	78,386	224,437	138,542	225,016	144,100
	1990 - Existing Jobs:Households		2010 - No Project Jobs:Households		2010 - With Project Jobs:Households	
Tassajara Valley Study Area	0.26		0.09		0.10	
CCC Tri-Valley Subarea	1.16		1.24		1.13	
Total Contra Costa County	0.91		0.99		0.98	
AC Tri-Valley Subarea	1.62		1.82		1.82	
Total Tri-Valley	1.44		1.62		1.56	

Sources: TVTC Final Expected Growth Scenario, 05/03/95; TVPOA Land Use Data by Traffic Zone 09/15/95; Economic & Planning Systems, 1995.

TABLE 4.12-15

PROJECTED TASSAJARA VALLEY HOUSING DEMAND

By Income Category

Annual Ho	ouseh	old Income		Demand from Local Workers	Household Demand Distribution	Maximum Affordable Price	Maximum Affordable Rent
\$0	to	\$22,500		81	20.7%	\$63,999	\$468
\$22,501	to	\$35,300		73	18.7%	\$100,999	\$734
\$35,301	to	\$52,900		96	24.5%	\$198,999	\$1,322
\$52,901	to	\$75,000		69	17.6%	\$281,999	\$1,874
\$75,001	to	\$100,000		40	10.2%	\$375,999	\$2,499
\$100,001	and	+	(1)	32	8.2%	#N/A	#N/A
Total			(2)	392	100.0%		

- 1 Not suitable for quantitative affordability analysis.
- 2 Totals may differ slightly from aggregate cell estimates, due to round-off.

Source: Economic & Planning Systems, 1995.

Although the Tri-Valley region is expected to experience a deficit of housing affordable to local workers in the lower income categories with or without the project, the project would increase the need for such units. The 2010 distribution of housing need for projected workers and housing supply by income category for the Tri-Valley region and its Contra Costa and Alameda County subregions is shown on Table 4.12-16, assuming no project implementation, and Table 4.12-17, which assumes project buildout. All dollar figures are presented in 1990 constant dollars.

Without the project, the Tri-Valley portion of Contra Costa County is expected to experience an inadequate supply of housing in price categories affordable to lower-income households formed by workers employed in that part of the Tri-Valley. This housing deficit would be about 11,230 units: 5,890 for very-low-income households and 5,340 for low-income households. In the middle income ranges, a surplus of about 700 units is projected for moderate-income households, and a deficit of approximately 970 units is projected for households having just-above moderate incomes. Housing for the two highest income categories is estimated to be in surplus by approximately 21,240 units in this Tri-Valley portion of the County, which equals 55 percent of total projected housing demand.

The Tri-Valley portion of Alameda County is projected to experience a shortage of housing affordable to very-low-income households of about 16,090 units, and an additional deficit of about 10,770 units affordable to low-income households. A surplus of about 5,590 units affordable to moderate-income households is projected for this part of Alameda County. The projected surplus of supply in the above moderate-income categories is estimated at 5,930 units.

TABLE 4.12-16

PROJECTED TASSAJARA VALLEY HOUSING BALANCE BY INCOME GROUP

Incremental Impacts of Buildout of Proposed Project

Annual Household Income			Projected Projected Changes in Changes in Housing Housing Need Supply		Projected Changes in Surplus / Deficit of Housing		
\$0	to	\$22,500		79	0	0	(79)
\$22,501	to	\$35,300		70	0	0	(70)
\$35,301	to	\$52,900		91	1,478	1,387	0
\$52,901	to	\$75,000		64	1,382	1,316 (3)	2
\$75,001	to	\$100,000		37	1,629	1,592	0
\$100,001	and	+	(1)	30	1,070	1,040	0
Total			(2)	371	5,558	5,333	(147)

- 1 Not suitable for quantitative affordability analysis.
- 2 Totals may differ slightly from aggregate cell estimates, due to round-off.
 Assumes existing dwellings remain at 2010. Incremental TVPO households = 5,558, based on 5,950 proposed total dwelling units in TVPOA PUD plan, occupied at 95.0% or 5,653 occupied units, less 95 existing Tassajara households within TVPOA PUD area.
- 3 Proposed TVPOA PUD housing in this category would more than offset deficit otherwise projected for the Contra Costa County subarea of Tri-Valley by 2010.

Sources: Anthony Hurt & Associates, 1993; Economic & Planning Systems, 1995.

TABLE 4.12-17

PROJECTED TRI-VALLEY HOUSING BALANCE BY INCOME GROUP

Year 2010 - No Project

Subarea Ar	nual H	ouseh	old Income		Projected Housing Need	Projected Housing Supply	Proje Surplus of	ected / Deficit Housing	Projected Deficit as % of Need
Contra Costa C	ounty	Suba	rea						
		to	\$22,500		6,110	221		5,888	96%
\$3	22,501	to	\$35,300		6,870	1,526		5,344	78%
\$	35,301	to	\$52,900		8,811	9,505	694		
\$	52,901	to	\$75,000		8,161	7,183		977	12%
\$	75,001	to	\$100,000		4,838	13,536	8,698		
\$10	00,001	and	+	(1)	3,897	16,436	12,539		
CCC Subtotal				(2)	38,686	48,408	21,931	12,209	32%
Alameda Count	y Suba	irea							
		to	\$22,500		17,776	1,683		16,093	91%
\$2	22,501	to	\$35,300		19,120	8,348		10,772	56%
\$3	35,301	to	\$52,900		23,935	29,526	5,592		
\$5	52,901	to	\$75,000		21,447	21,113		334	2%
\$7	75,001	to	\$100,000		12,583	14,331	1,748		
\$10	00,001	and	+	(1)	10,614	15,133	4,519		
AC Subtotal				(2)	105,474	90,134	11,859	27,199	26%
Total by Income	Categ	jory							
		to	\$22,500		23,886	1,904		21,981	92%
\$2	22,501	to	\$35,300		25,990	9,874		16,116	62%
\$3	35,301	to	\$52,900		32,745	39,031	6,286		
\$5	52,901	to	\$75,000		29,608	28,296		1,311	4%
\$7	75,001	to	\$100,000		17,421	27,868	10,446		
\$10	00,001	and	+	(1)	14,511	31,568	17,058		
Tri-Valley Total				(2)	144,160	138,542	33,791	39,408	27%

¹ Not suitable for quantitative affordability analysis.

Sources: TVTC Final Expected Growth Scenario, 05/03/95; Economic & Planning Systems, 1995.

² Totals may differ slightly from aggregate cell estimates, due to round-off.

For the Tri-Valley as a whole, without the project, there is a projected deficit of 38,100 units affordable to lower-income households: a 21,980 deficit in housing for very-low-income households and a 16,120 unit deficit in housing affordable to low-income households. Housing affordable to moderate-income households is projected to be in surplus of employment-based demand by about 6,300 units. An overall surplus of about 26,200 units affordable to above moderate-income households is projected across the Tri-Valley region.

The development of the proposed project's housing at the proposed prices would increase regional deficits in housing supply affordable to lower-income households by about 180 units. It would also increase the oversupply of housing affordable to moderate and higher income households in the Tassajara Valley, and in the Contra Costa County subarea of the Tri-Valley. The proposed project would result in a serious deficit of housing affordable to the employees that it would generate and would exacerbate the situation within Contra Costa County and the Tri-Valley region, which are expected to lack affordable housing for local workers.

For the Tri-Valley portion of Contra Costa County, the proposed project would increase the deficit in housing supply affordable to very-low- and low-income households by about 150 households (see Tables 4.12-16 and 4.12-17). For Tri-Valley/Contra Costa households with moderate incomes, the project would triple the expected surplus of available housing units, from 694 to a projected 2,081 units. For just-above-moderate income households, the project is estimated to result in a net surplus of about 340 units, after wiping out a projected deficit of 980 units. The project would increase the oversupply of units affordable to high income households (those with annual incomes greater than \$75,000) by about 2,630 units, from 21,240 to 23,870. The project is estimated to raise the net surplus of high income units from about 27,500 units to 30,135 units for the Tri-Valley overall.

In order for the Tassajara Valley project to be consistent with the policies enumerated by the County for the Dougherty Valley project (Contra Costa County, 1993), a minimum of 25 percent of the dwellings to be built in the project area should be affordable to very-low-, low- and moderate-income households. These policies also require all affordable units to be maintained as such for "a minimum period of twenty years for for-sale units and thirty years for rental units."

The "Dougherty Valley Affordable Housing Program," adopted by the County Board of Supervisors on March 22, 1994, requires: "At least ten percent (10%) of the affordable units shall be reserved for very-low-income households and twenty-five percent (25%) for low-income households. No more than sixty-five percent (65%) of the affordable units shall be for moderate income households. The provision for additional very-low- and low-income households is encouraged." These percentages translate into the following: 2.5 percent (10% of 25%) of total dwellings affordable to very-low-income households, 6.25 percent (25% of 25%) for low-income households and 16.25 percent (65% of 25%) for moderate income households.

The applicant proposes to include 1,586 moderate-price units in the project area, consisting of the multi-family medium density and mixed use dwellings (see Table 4.12-8) These add up to almost 27 percent of the 5,950 total dwellings, exceeding the County requirement of 25 percent for affordable housing. With adequate assistance, a substantial portion of these could be made affordable to very-low- and low-income households.

Mitigation Measures

All of the following mitigation measures are required to reduce the impact of housing affordability to a less-than-significant level.

- 4.12-6(a) The applicant should be required to provide a minimum of 25% of the units affordable to low- and moderate-income households, with a minimum of 10% reserved for very low-income households, a minimum of 25% for low-income households, and a maximum of 65% for moderate income households.
- 4.12-6(b) In order to achieve the above requirements, the following measures should be incorporated into the applicant's development plans:
 - The County should consider requiring the project to include higher density housing (20 to 30 dwelling units per acre), including some rental housing and some senior housing, in proximity to arterial roads and shopping areas.
 - The project Design Guidelines should be revised to show how higher density (20 to 30 dwelling units per acre) moderately priced housing, including rental housing, and including housing for seniors and for disabled persons, may be incorporated into the project.
 - The project development agreements should ensure that units initially made available to lower-income households remain in that price range for twenty years for ownership housing and for thirty years for rental housing.
 - The applicant should work with the County to develop appropriate financing mechanisms and non-financial assistance measures that would reduce the cost of development for very-low- and low-income housing.
- 4.12-6(c) To enable the County to ensure that the project meets its affordable housing goals and does not exceed approved overall densities, the PUD plan should be revised to delete provision for secondary units as an option for affordable housing.

To implement these mitigation measures, Contra Costa County has several housing assistance programs that may be applicable and available. These include the HOME and CDBG programs and County Redevelopment Agency set-aside funds which may be used to "facilitate new development and special housing needs for very-low- and low-income households by financing predevelopment, site acquisition and site improvements, and by providing first-time home buyer assistance" (County General Plan Housing Element, Implementation Measure 6-2.0). County policy would also support the "discretionary waiving of all or a portion of planning fees for nonprofit developers of projects affordable to very-low-and low-income households" (Ibid., 6-2.4). Considering the projected surplus of moderate-income level housing, a substantial portion of these could be made affordable to lower-income households without excess utilization of subsidies.

In order to maintain the affordability of assisted units, and simultaneously ensure that they do not generate windfall profits derived from the initial assistance, there are a number of mechanisms that the applicant may utilize. Rental projects could be subject to a regulatory agreement stipulating that the project owner must periodically submit documentation to the County to assure compliance. For-sale units (including multiple family) may be made subject to recorded deed restrictions giving the County or its assignee a right of first refusal to purchase the unit or group of units. The applicant may dedicate land to a public or not-for-profit entity to facilitate construction of affordable units. The developer may also contract with a non-profit entity to construct some or all of the very-low-income units, but this would not relieve the applicant of the obligation to provide the affordable housing. This would be in accord with County General Plan Policy 6.4, which states that the creation of public/private partnerships is to be encouraged for the purposes of facilitating lower- and moderate-income housing production.

Affordable Housing Needs by Development Phase

Impact 4.12-7 If project implementation follows the proposed phasing plan presented by the applicant, it would contain an adequate supply of housing affordable to moderate-income households in all phases, but no housing affordable to very-low- or low-income households in any phase.

The area tentatively designated as Phase 1 of the project would consist of 3,056 dwellings, or about 50 percent of the project total, but would include only 40 percent of the moderate priced (under \$200,000) units. (See Table 4.12-10.) The proportion of housing that would be affordable to moderate income households would be about 21 percent on completion of Phase 1, would rise to 24 percent on completion of Phase 2 and would reach 27 percent at the end of Phase 3.

Assuming the project is developed by phase and by price level as outlined by the applicant, the number of units affordable to moderate-income households would more than meet County policy in all phases. The housing needs of low- and very-low-income households, however, has not been addressed by the project and would require a substantial number of dwellings to be made affordable to them in each phase of the project, if the same percentages were to apply to each phase as to the total units in the project area.

Mitigation Measures

The following mitigation measures are required to reduce the impact of an inadequate supply of affordable housing to a less-than-significant level.

4.12-7(a) The applicant should be required to provide a minimum of 25% of the units in each phase of development affordable to low- and moderate-income households, with a minimum of 10% reserved for very-low-income households, a minimum of 25% for low-income households, and a maximum of 65% for moderate-income households.

- 4.12-7(b) In order to achieve the above requirement, the following measures should be incorporated into the applicant's development plans:
 - At each stage of project implementation, appropriate provision should be made to ensure that sufficient housing affordable to very-low-income, low-income and moderate-income households is included. The affordable units should be dispersed throughout the project and consist of a variety of housing types, including apartments, second units, etc.
 - As each phase develops, the applicant should ensure that the required minimum number and percentage of dwellings affordable to very-low income, low-income and moderate income households are either occupied or available for rent or for sale in Tassajara Valley.

Housing Affordability and Transportation Impacts

Impact 4.12-8 The project's lack of affordable housing for lower income workers will generate additional commuting, which would be an indirect transportation impact.

Although project residential development may alleviate to some extent a projected future labor shortfall caused by transportation constraints at the Tri-Valley gateways, it may adversely impact traffic congestion within the Tri-Valley. The project as proposed will provide no new housing affordable to low- or very-low-income employees, while many of the new employees of the project and in the Tri-Valley region are anticipated to be lower paid clerical and retail workers who are already priced out of the region's housing market.

While significant employment growth is anticipated for the San Ramon area in Contra Costa County, over 75 percent of the Tri-Valley's expected employment growth from 1990 to 2010 is forecast for the Alameda County subregion located south of I-580. (See Table 4.12-4.) Workers living north of I-580 and commuting to work-sites south of I-580 may not relieve, and may actually exacerbate, travel pressures on the major transportation corridors within the Tri-Valley.

Mitigation Measures

The following mitigation measures are required to reduce the impact of additional commuting to a less-than-significant level.

4.12-8(a) The applicant should work with the County to develop trip-reduction and mass transit strategies that would reduce the impact of commuting by all on-site residents and workers. This may include development of a Traffic Management Plan involving periodic survey and monitoring of local employers.

4.12-8(b) Higher density units should be clustered around transit sites and commercial uses within the project site.

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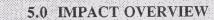
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5.0 IMPACT OVERVIEW

5.1 SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACTS

Land Use

The project would convert approximately 232 acres of "prime farmland," as defined by the California Department of Conservation, to non-agricultural uses. In addition, 1,750 acres of farmland of local importance and 2,272 acres of grazing land would be lost. California Code of Regulations (Section 15000 et seq., Appendix G [Y]) states that a project will normally have a significant effect on the environment if it will convert prime agricultural land to non-agricultural use, or impair the agricultural productivity of prime agricultural land. The 50 percent reduced unit alternative could be designed to allow the "prime" and "unique" farmland to remain in production. However, its productivity would be significantly impaired by surrounding urban land uses. This would be a significant unavoidable impact. The cumulative loss of agricultural land also is a significant unavoidable impact that cannot be mitigated.

Air Quality

New emissions generated by the project would cause a deterioration in regional air quality. The emission of reactive organic gases (ROG), nitrogen oxides (NO_x), particulate matter (PM-10) and sulfur oxides (SO_x) all exceed BAAQMD significance criteria by a factor of five. Although mitigation measures have been recommended that would reduce project impacts by 10 to 20 percent, there is no practical way to reduce project and cumulative impacts by over 80 percent to bring emissions below BAAQMD significance thresholds. Thus, this remains a significant unavoidable impact.

Visual Quality

Camino Tassajara is a designated scenic corridor. Development of the Tassajara Valley would permanently alter the rural character presently viewed from area roadways, adjoining neighborhoods, trails and parks. The applicant's plan proposes development that is in keeping with the valley's character, maintaining open space and restricting most development to the lower portions of the hillsides. However, to achieve the objectives of the plan, mass grading of approximately 2,100 acres is proposed. The openness that is now experienced when driving through the valley would be lost, except in areas where open space adjoins the roadway. Mitigation measures are recommended to help reduce the visual impact, but not to a less-than-significant level.

Implementation of this project and others in the Tassajara/Dougherty Valley and in East Dublin would have a cumulative impact on the region's visual resources. Camino Tassajara is designated a scenic route to the County line and development along this roadway, into Alameda County, would contribute to the loss of scenic views and rural visual character. This is a significant unavoidable impact that cannot be fully mitigated to a less-than-significant level.

Public Utilities

Cumulative development would create a significant impact on existing DSRSD disposal facilities during wet weather. At the present time the District exports wastewater through the LAVWMA pipeline to EBDA and DSRSD's allocation in the capacity of the pipeline is almost reached. The District is exploring two options to increase capacity in the export pipeline, however neither option has been approved. Without implementing a disposal option, the cumulative impacts would exceed DSRSD's ability to dispose of the additional wastewater. Therefore, this is a significant cumulative impact that cannot be mitigated to a less-than-significant level at this time.

Public Services

During the first phase of development the project would not meet community park/recreation standards, which can overburden the three proposed neighborhood parks and impact area facilities. If the applicant(s) is unwilling to proceed with developing an additional 12 acres required under the County park standards, this would remain as a significant, unavoidable impact until the second phase is built.

5.2 GROWTH INDUCEMENT

Land Use

Precedent Setting Effects

Under the prevailing Contra Costa County General Plan, the site is designated Agricultural Lands (AL). In this category, the minimum parcel size is 5 acres. Because of the inherent limitations of the land, including steepness of slopes, landslides, groundwater resources and septic tank leech field sites, most of the land in the project area could not support 5-acre lots. The actual holding capacity of the site is probably on the order of 200 to 400 lots. The proposed project would add approximately 5,950 residential units, along with two village centers and the infrastructure to support a community of this size. If the requested General Plan Amendment is approved, it could encourage owners of other nearby properties to seek General Plan amendments for their projects.

Currently, urbanization of lands to the east of the site is restricted by the urban limit line. Lands outside the urban limit line (ULL) cannot request *General Plan* amendments or rezonings to accommodate urban land uses. However, approval of the Tassajara project at the urban fringe could create an impetus for landowners outside the ULL to request a shift in the ULL eastward rather than

retaining the prevailing uses. Specifically, if the Tassajara project can be viewed as being in a transition area between urban lands (to the west) and open space uses (to the east), large lot rural residential uses would seem appropriate. Conversely, an urban development could be viewed as growth inducing.

Land Values

According to *The Impacts of Farmland Conversion in California* (Jones & Stokes Associates), real estate values increase as urban areas approach. The agricultural areas closest to cities receive the most urban stress resulting in lower productivity, but have the highest development value. This results in pressure being placed on the County to extend the urban limit line. This may result in a constant loss of agricultural land with one valley adjacent to city limits being developed at each *General Plan* amendment period or every five years when the Board of Supervisors re-evaluates the urban limit line boundaries. The urban limit line can be changed, as long as there is no violation of the 65/35 Land Preservation Plan, by a four-fifths vote by the Board of Supervisors after holding a public hearing and making one or more of seven findings based on substantial evidence in the record.

Public Services

The extension of public facilities and services, and increased roadway capacity to serve the project, could facilitate additional urbanization in the lands which adjoin the project to the east.

5.3 CUMULATIVE IMPACTS

Introduction

This cumulative analysis is based on the potential growth in the Dougherty Valley, the Westside San Ramon Specific Plan area, and the Tri-Valley including North Livermore General Plan and Eastern Dublin Specific Plan. Additionally, the cumulative traffic analysis considers the Cowell Ranch and Discovery Bay West development proposals in addition to the 2010 buildout accounted for in the Tri-Valley Transportation Model.

Land Use

Development of the Tassajara project would transfer the stress of urban encroachment from Tassajara Valley to the agricultural areas immediately east. According to the General Plan, it should be the responsibility of the developers and neighborhood/city agencies to enforce adequate buffers between agricultural and residential uses, control domestic pets, keep plant diseases and bush or tree seeds from blowing from residential landscaping to agricultural areas, and institute programs to protect agricultural land from trespass and vandals. Some of the planned homes appear to be too close to the urban limit line to provide an adequate buffer.

Cumulative Loss of Agricultural Land and Open Space

The project is one of several large scale development projects proposed in the Tri-Valley region. The Tassajara project, together with other proposed projects would result in the urbanization of large areas of open space and the cumulative loss of agricultural land in the Tri-Valley region. Table 5.3-1 presents the acreage, number of units approved and the potential population increase in the Tri-Valley region.

TABLE 5.3-1 LARGE DEVELOPMENT PROJECTS IN THE TRI-VALLEY REGION

Project	Acres	Units	Population
Dougherty Valley	6,000	11,000	29,810¹
Eastern Dublin Specific Plan	3,500	12,356	32,510
Westside San Ramon Specific Plan	3,300	1,289	3,854
North Livermore General Plan	10,000	17,000	46,750
Subtotal	22,635	41,322	111,955
Tassajara Valley ²	4,491	5,950	14,487
Total	27,126	47,272	126,442

¹ Assumes higher numbers of possible ranges to provide worst-case scenario.

² Accounts for Wendt Ranch development.

Source: TVPOA and Mills Associates, 1997.

Of the 4,491 acres (including Wendt Ranch) in the planning area, approximately 1,915 acres have been mapped as "farmland of local importance" and 2,272 acres mapped as grazing land. Most of the Tassajara Valley land now in agricultural production will be removed from agricultural use. Although individually not significant, this project will cumulatively increase the land converted from agricultural use to urban uses.

A decrease in the amount of agriculture in the area may lead to the number of farm supplies being sold falling below a critical mass needed to maintain a healthy agricultural support industry in the area. When the local support industries fail, support services need to be imported from other areas. Therefore, too much farmland loss in an area may collapse the local agricultural industry. This project alone will not collapse the industry, but will cause an incremental increase in pressure in that direction.

Conversion of Land to Urban Uses

Development of the project would extend the boundaries of urban development into a new area. Excluding Wendt Ranch, the project would convert 1,938 acres (not including the community park) directly to urban and suburban land uses. A large portion of the 2,245 open space acres in the project area that are to be reserved for detention ponds, stream corridors, wildlife habitat and general open space will also become encapsulated into the larger urban fabric and cease to serve the larger open space function.

In 1991, at the time of adoption of the *Contra Costa County General Plan, 1990-2005*, 144,000 acres of land within the urban limit line had been converted to urban uses. To comply with the 65/35 Land Preservation Standard, only 24,000 more acres within the ULL can be converted to urban uses. The Dougherty Valley project would convert an estimated 2,700 additional acres to urban use if it proceeds as approved. Conversion of 1,845 acres in the Tassajara Valley project to urban uses (not counting parks and recreation lands) represents approximately 9 percent of the County's remaining non-urban land under the 35 percent urban land cap (1,845 acres/24,000 acres - 2,700 acres Dougherty Valley).

Another major land development project being processed by Contra Costa County is Cowell Ranch (1,626 acres of residential; 124 acres business park; 247 acres of public and semi-public), which represents 9.4 percent of the remaining non-urban land under the 35 percent urban land cap. Furthermore, there are a number of proposed land development projects in the unincorporated area that are smaller than the Tassajara project, but are cumulatively substantial. Most of these projects are in the East County region. Maintaining the ULL helps to offset the continual loss of agricultural land, however, the cumulative loss of agricultural land is a significant unavoidable impact that cannot be mitigated.

Geology/Seismicity/Soils

Ground shaking or its secondary effects (earthquake-induced fill settlement, landslides, or failure of cut and fill slopes) could result in significant damage to structures and other improvements, and could possibly result in loss of life. Cumulative development of the region and the consequent introduction of additional structures and residents would expose additional people to these hazards. Implementation of project-specific mitigation measures discussed in Section 4.2, Geology/Seismicity/Soils, will reduce this impact to a less-than-significant level.

Flood Hazards/Drainage/Water Quality

There are existing constrictions in the lower watershed areas of Tassajara and Alamo Creeks, on the floor of Amador Valley. The most severe flooding problem exists at the point where Arroyo de la Laguna flows under I-680. Because of these existing deficiencies, the Alameda County Flood Control

District has requested that peak flows at the County line not be allowed to increase over the existing conditions. Nevertheless, the total volume of runoff from the project will increase over the existing condition. The hydrology study indicates that the three-hour 100-year storm yields an approximate 24-acre foot increase in the total volume of runoff from the Tassajara Creek portion of the site. This represents a 1.6 percent increase in the volume of runoff at the County line. For the Alamo Creek portion of the site, the project would increase the total volume of runoff by approximately 5.7 acre feet. Just downstream from the site, this represents a 2.2 percent increase in the volume of runoff.

Development of Dougherty Valley and of lands in the East Dublin area will also add to the total volume of runoff that must be conveyed by downstream drainage facilities through Amador Valley to Niles Canyon. The cumulative impact of all developments in the Tassajara and Alamo Creek watersheds is significant. Zone 7 of the Alameda County Flood Control District is responsible for improving and maintaining flood control channels in the Alameda County portion of these watersheds. Extensive widening and straightening of existing Arroyo channels have significantly reduced flood hazards. However some areas, especially the western portion of Pleasanton along Arroyo de la Laguna, continue to be subject to flooding.

Channel improvements are paid for with development fees under a capital improvement program. Zone 7 charges a drainage fee for new development. To date, approximately 35 miles out of a total of 85 miles of planned improvements in the Livermore-Amador Valley area have been completed. Use of stormwater detention basins could substantially reduce the need and cost of these planned channel improvements. However, detention basins impact the timing of runoff, and development increases the total volume of runoff that must be conveyed by downstream channels. The system of basins ultimately developed in the Alameda Creek watershed, including Tassajara and Alamo Creeks, form part of a system that can be coordinated to minimize downstream flooding problems and improvement costs, or they can be operated independently to serve local needs only. Mitigation measures recommended in Section 4.3 will help to reduce the significant cumulative impacts on downstream drainage facilities.

Traffic and Circulation

Land Use

There are two major land use developments that could contribute to foreseeable future impacts beyond the year 2010. The proposed Cowell Ranch development, currently under environmental review, would create approximately 5,000 housing units and 6,600 jobs by the year 2026. The Discovery Bay West development, located in east Contra Costa County, would create 2,135 housing units and 69 jobs by the year 2010.

A third major development was considered for inclusion under the cumulative land use. The proposed Mountain House development, located in San Joaquin County just east of the Alameda County line, was ultimately excluded from the cumulative analysis because the Tri-Valley Transportation Model includes a cap on Altamont Pass traffic of 8,000 vehicles in the peak direction, which is the capacity of I-580.

Transportation System

There are several transportation plans in Contra Costa, Alameda, and San Joaquin Counties that are likely to influence cumulative traffic conditions. These are the Contra Costa Transportation Authority Countywide Comprehensive Transportation Plan, the Alameda County Congestion Management Agency Transportation Plan, the San Joaquin County Council of Governments Transit Plan, the Mid-State Toll Road, the Delta Expressway/Vasco Road Relocation, and the Altamont Pass Rail Demonstration Project. The Mid-State Toll Road is included as a viable project to consider since the initial environmental process was started and a franchise contract with the state is in place.

The Contra Costa Transportation Authority Countywide Comprehensive Transportation Plan and the Alameda County Congestion Management Agency Transportation Plan are included in the Year 2010 Expected network and have therefore already been accounted for in the previous analysis.

The San Joaquin County Council of Governments Transit Plan and the Altamont Pass Rail Demonstration Project are expected to have no impact on cumulative traffic conditions in the Tri-Valley area. The latter is projected to produce only 100 peak-hour transit trips over the Altamont Pass.

The proposed Mid-State Toll Road would extend from the SR 84/I-680 junction in Sunol to Highway 160 in Antioch. It would also extend north of the Antioch Bridge into Solano County, but that portion would lie well outside the Tri-Valley area. The toll road is proposed as a four-lane freeway with interchanges at I-680/Niles Canyon, SR 84, Stanley Boulevard, I-580, Vasco Road, Walnut Boulevard, and SR 160. This roadway could serve as a vital north-south regional roadway facility in the Tri-Valley region.

Traffic Conditions

The development of Cowell Ranch and Discovery Bay West would create additional traffic demand in the Tri-Valley area. Much of this demand could be served by the Mid-State Toll Road and the SR 4 Bypass/Vasco Road Relocation which would also be located in east Contra Costa County.

The project under these cumulative conditions would not have any different impacts than it would under year 2010 project conditions. All previously identified project mitigation measures would be needed under cumulative conditions. Refer to mitigation measures in Section 4.5.

Biological Resources

Cumulative development in southeastern Contra Costa County and northeastern Alameda County would contribute to a significant reduction in the extent of open grasslands and create fragmentation of the important foraging habitat they provide to raptors and predatory mammals. Future development would

reduce the habitat value of the proposed open space areas through increased human activity and lack of connectivity between areas of suitable habitat, eliminating sensitive species such as golden eagle, American badger, mountain lion and possible San Joaquin kit fox from large portions of the surrounding area. Proposed development to the west in the Dougherty Valley area would magnify the importance of providing adequate movement corridors across the Tassajara Valley, linking proposed open space immediately west of the project site with the undeveloped lands of the Black Hills to the north and the Collier Canyon area to the east. At a minimum, mitigation measures recommended to provide for habitat connectivity by linking open space areas would be necessary to alleviate the significant impact of project contribution to cumulative development. Measures recommended in Section 4.4 would help toward achieving the linkages required to provide habitat connections.

Noise

This section discusses changes in the noise environment in the vicinity of the site due to cumulative development in the area. The discussion is limited to traffic noise along major roadways which project traffic would use, since traffic is and will continue to be the major noise source in the area. Table 5.3-2 shows existing (1990) to future (2010) traffic noise level increases with and without the project along major roadways in the vicinity of the project. Many of these roadways would experience noise level increases above 3 dBA with or without the project. The large noise level increases shown in Table 4.6-7 would, with the exception of the segments of Camino Tassajara, result from other cumulative development in the greater area and would not be due to this project. Cumulative traffic noise along these roadways would result in a significant impact upon existing residents in the area. However, the project's contribution to the cumulative noise level increase would not be significant.

Air Quality

The Tri-Valley area and greater Bay Area are experiencing continued growth in population and vehicle use that will affect the emission of regional pollutants such as hydrocarbons and oxides of nitrogen. Current projections are that regional emissions of these pollutants will decrease in the future, despite cumulative growth in population and vehicle use, due to regional programs for reducing emissions that are in place or currently being considered. The East County Area Plan DEIR (Alameda County Planning Department, 1993) included an analysis of future emission trends within the Tri-Valley subregional air basin. The East County Area Plan DEIR analysis included the effects of the Tassajara development together with cumulative development within the Tri-Valley area. The predicted trend for ozone precursors was a continuation of the gradual decline in emissions that has been occurring for the last 20 years. A gradual increase in PM-10 emissions from vehicles was predicted. Therefore, the project does not create a cumulative impact and no mitigation measure is necessary. Mitigation measures identified in Section 4.7 when implemented will further help to decrease air emissions.

TABLE 5.3-2 EXISTING (1990) TO FUTURE (2010) CUMULATIVE TRAFFIC NOISE INCREASES EXISTING ROADWAY NETWORK

	Noise Incr	eases (dBA)
ROADWAY	w/Project	w/o Project
ALCOSTA BOULEVARD		
Bollinger Canyon-Montevideo	0	0
Montevideo-Village Pkwy.	3	2
BLACKHAWK ROAD		
Mt. Diablo Scenic-Blackhawk Drive	3	3
Blackhawk Drive-Camino Tassajara	2	2
BOLLINGER CANYON ROAD		
Alcosta-Dougherty	8	8
CAMINO TASSAJARA ROAD		
Sycamore Valley-Crow Canyon	2	2
Crow Canyon-Blackhawk Drive	6	3
Blackhawk Drive-Finley	3	3
CROW CANYON ROAD		
Camino Tassajara-Dougherty	7	6
Dougherty-Shoreline	5	4
Shoreline-Alcosta	3	3
DOUGHERTY ROAD		
Crow Canyon-Bollinger Canyon	12	12
Bollinger Canyon-Windemere	9	8
Windemere-Old Ranch	12	10
Old Ranch-County Line	8	8
HIGHLAND ROAD	4	4
LAWRENCE ROAD	5	5
OLD RANCH ROAD	6	6
CAMINO TASSAJARA ROAD		
Finley-Johnston	3	3
Johnston-Highland	5	4
Highland-Windemere	9	4
Windemere-County Line	12	10
TASSAJARA ROAD		
County Line-I-580	12	11

Public Utilities

Water Service

Cumulative development within the Dublin San Ramon Services District would place a demand on the existing water supply. DSRSD does not have an existing adequate supply without securing water entitlements through a transfer with Berrenda Mesa Water District in the San Joaquin Valley. The agreement with BMWD currently allocates water to supply Dougherty Valley (excluding the Country Club at Gale Ranch project that is served by EBMUD). DSRSD has an option to purchase an additional 5,000 afy of water entitlements for use within DSRSD's service area or for future development projects (Tassajara) as DSRSD's water service area is expanded. The District is limited in the extent of development that can be served by this new supply. Accounting for the Tassajara project of 2,860 afy, a surplus of 2,140 afy would be available to serve other development within the District. However, when this is committed, DSRSD would have to procure an additional water supply. Mitigation measures set out in Section 4.9 relative to providing a water supply, would mitigate the cumulative impact.

Cumulative development would also depend upon the District's ability to construct the transport and treatment facilities to serve anticipated projects. (Refer to discussion in Section 4.9 and mitigation measures pertaining to developers paying a fair share of costs to transport and treat the water supply).

Wastewater

Cumulative development within the DSRSD service boundary would create an impact on existing treatment and disposal facilities. However, DSRSD will increase plant capacity as required based upon projections in the Master Plan update currently underway. This not considered a significant cumulative impact.

However, cumulative development would create a significant impact on existing disposal facilities during wet weather. At the present time the District exports wastewater through the LAVWMA pipeline to EBDA. DSRSD's allocation in the capacity of the pipeline is almost reached. There are two options to increase disposal capacity: 1) a new LAVWMA export pipeline to EBDA; and 2) demineralization and groundwater injection as described in the Plan of Services for Tassajara Valley (Corolla, 1994). The District is currently undertaking a demonstration project for groundwater injection and LAVWMA is also discussing increasing export capacity to EBDA. Neither option has been approved. Without implementing either of these disposal options, the cumulative impacts would exceed DSRSD's ability to dispose of the additional wastewater. Therefore, this is a significant cumulative impact that cannot be mitigated to a less than significant level.

The cumulative impact on Contra Costa Central Sanitary District collection, treatment and disposal facilities would have a significant impact. The capacities of certain elements in the transport system, certain pumping and process units in the treatment plant, and the outfall, would need to be increased

to serve Tassajara and other approved projects within the District. However, environmental concerns may limit CCCSD's ability to discharge treated effluent in Suisun Bay. Mitigation measures 4.9-9(a) and 4.9-9(b) would reduce this impact to a less-than-significant level.

Water Recycling

Water recycling can be used to dispose of wastewater flows during dry weather. Assuming that DSRSD would require other developments within their service area to utilize water recycling in a manner similar to the Tassajara development, there would be no cumulative impact on DSRSD's dry weather disposal capability. Treatment and transport facilities similar to those described in Section 4.9 would be required to serve other approved developments within the District's service area. The use of recycled water on a cumulative basis could be considered a beneficial impact in that it would reduce the demand on existing regional wastewater transport facilities.

Public Services

Law Enforcement

As stated in Section 4.10 the project, coupled with development of Dougherty Valley, would cumulatively contribute to the demand for an additional substation in the San Ramon Valley. Based upon the standards contained in the County Growth Management Element, 155 square feet per 1,000 residents is required for a total of 2,245 square feet for the Tassajara project. The existing substation in Alamo is not adequate to accommodate the number of law enforcement officers that will be required for this project, as well as the Dougherty Valley development. Mitigation measure 4.10-1(d) responds to this impact.

Buildout of the Tassajara and Dougherty Valleys as proposed would also cumulatively contribute to the demand placed upon the California Highway Patrol. As traffic levels increase, the CHP's services are in greater demand monitoring traffic speed, responding to accidents and reported traffic violations. Mitigation measure 4.10-1(b) responds to this impact.

Fire Protection

As development occurs in the rural areas, the level of fire service changes from that of a rural level to an urban level of service, thereby increasing the demand placed upon the fire district. The influx of people results in an increase in calls for medical emergencies, structural fires and wildland fires. Without additional manpower and equipment to serve cumulative development in the service area, the District may not be able to meet the performance standards established in the Growth Management Element of the *General Plan*. Mitigation measures 4.10-2(a) and (b) and 4.10-3(a) to (e) respond to the cumulative impact.

Parks and Recreation

Adequate acreage has been set aside in the Preliminary Development Plan to accommodate residents of the Tassajara project. The cumulative effect of this development and others in the San Ramon Valley is negligible. However, during Phase 1 of development, the project would contribute to cumulative conditions in Danville if the community park facilities scheduled for Phase 2 are not constructed during Phase 1. Mitigation measure 4.10-5(a) should be implemented to reduce the impact on Danville recreational facilities.

Schools

Cumulative development within the San Ramon Valley Unified School District will create a substantial demand on existing school facilities. Elementary schools are at or over capacity and children are diverted to schools outside their resident area. The *General Plan* contains goals and policies (7B, 7AO, 7AR, 7-144, and 7-145) to ensure that adequate school facilities are available. The Tassajara Preliminary Development Plan provides adequate school facilities on the site for elementary and middle-school students. Students in grades 9-12 would be required to attend school off-site, but the high school proposed in Dougherty Valley would accommodate these students. Mitigation measures 4.10-7(a) to (d) respond to the school impact.

Visual Quality

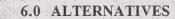
Implementation of this project and others in the Tassajara/Dougherty Valley and in East Dublin would have a cumulative impact on the region's visual resources. Camino Tassajara is designated a scenic route to the County line and development along this roadway, into Alameda County, would contribute to the loss of scenic views and rural visual character. This is a significant unavoidable impact. Mitigation measures recommended in Section 4.8 for the project will help to reduce the impact created by the Tassajara project, but cannot fully mitigate the cumulative effect in the region. Thus, this is considered a significant, unavoidable cumulative impact.

5.4 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

The Tassajara project would result in the loss in regional open space and the conversion of agricultural land to urban and suburban uses. The rural nature of the Tassajara Valley would be permanently altered. Development of the project would eliminate the capability of restoring or intensifying agricultural use of these lands. Moreover, urban development would preclude use of the site for other future beneficial uses, such as regional parkland, biological preserve or other potential uses that cannot yet be contemplated.

5.5 EFFECTS FOUND NOT TO BE SIGNIFICANT

Contra Costa County, in its Initial Study (on file at the Community Development Department, Martinez, California) determined that a number of possible environmental effects would be insignificant or could be adequately addressed by County staff in the development review process without further environmental assessment in this EIR. These issues included impacts on human health, potential alterations in climate, substantial depletion of non-renewable natural resources, a physical change that could affect unique ethnic cultural values and restrictions of existing religious or sacred uses in the project area.



6.0 ALTERNATIVES

Introduction

This chapter discusses seven alternatives to the proposed project. CEQA Guidelines 15126(d) state that "a range of reasonable alternatives to the project or to the location of the project" should be described. "The range of alternatives . . . is governed by 'rule of reason' that require the EIR to set forth only those alternatives necessary to permit a reasoned choice." The following discussion will provide decision makers with adequate information to make an informed decision. The seven alternatives discussed are: 1) No Project or no development; 2) Reduced Density—25 Percent; 3) Reduced Density—50 Percent; 4) Concentrated Development; 5) Compact Alternative; 6) Traffic Mitigation Alternative; and 7) Off-Site Alternative. A comparison of impacts with the proposed project is presented in Section 6.8, as well as identification of the environmentally superior alternative, as required by CEQA (CEQA Guidelines 15126, 1996).

Recent Approvals

In December 1996, the County Board of Supervisors approved a General Plan Amendment and Rezoning for the Wendt property, located in the northern portion of the Tassajara planning area. This 165-acre parcel fronts the south side of Camino Tassajara, directly opposite the east gate entrance to the Blackhawk development. The approved Wendt Ranch project consists of 323 dwelling units and open space. The Tassajara project surrounds this property on three sides. The alternative site plans presented in this chapter illustrate the land use designations shown on the approved Wendt Ranch general plan amendment. Additionally, the County is processing an application for a general plan amendment, rezoning and related entitlements. The site is a 42-acre parcel located in the southeast corner of the Lawrence Road/Camino Tassajara intersection. This site borders the western property line of the Tassajara planning area. Because this latter development proposal has not been approved, the site plans for the alternatives do not include the land use designations.

Due to the recent approval for the Wendt Ranch proposal, the alternatives analysis includes the 323 dwelling units of the Wendt Ranch site when discussing the No Project Alternative and throughout the alternatives analysis when discussing existing or background conditions.

Urban Limit Line

In late 1995, the Board of Supervisors instructed County staff to consider logical detachments from the urban limit line in the Dougherty Valley/TVPOA project areas. In the recent approval of the Dougherty

Valley General Plan Amendment, two areas were placed outside the urban limit line. These include Hidden Valley, a prime wildlife habitat which abuts the western boundary of the project site, and a small area at the southern end of Dougherty Valley adjacent to Camp Parks. (Refer to Figures 3.1 and 4.1-1.)

While this chapter mentions potential modification to the adopted urban limit line, a range of locations are possible in addition to the relocation reflected in the site plan for the Reduced Density—50 Percent Alternative. An urban limit line boundary could be established to reflect, for example, the boundary of any areas reclassified for urban use on the County General Plan. In July 1996, the Board of Supervisors directed County staff to provide a process to the Board for doing the five year re-evaluation of the urban limit line as expected by Measure C on a countywide basis. The contiguous areas would remain as Agricultural Lands, Open Space, or Parks and Recreation and be placed outside the urban limit line.

Since the existing urban limit line already includes the entire Tassajara planning area, implementation of the project would not directly cause any new significant environmental impacts as it relates to the adopted urban limit line. Conversely, the removal of lands from the adopted urban limit line will not cause significant environmental impacts and might help mitigate potential significant impacts of the project. Modification to the urban limit line is a planning issue rather than a CEQA issues, which can be considered during the review of the General Plan Amendment application for this area.

Characteristics of Alternatives

Table 6.0-1 provides a comparison of the residential lot yield and population of the proposed project and for the alternatives considered. There is a large range of possibilities for lot yield and project design. The alternatives selected for analysis are intended to be representative of this broad spectrum. Table 6.0-2 provides a summary of lot yield as a function of land use designation for the proposed project and for each of the five on-site alternatives. The following discussion provides a description of each alternative, along with an analysis of how each responds to the various environmental constraints of the site.

Table 6.0-3 summarizes the residential alternatives in terms of land use, roadway system and trip generation characteristics. Each alternative is compared to the project on the basis of its peak-hour and peak-direction trip generation capabilities. In each case, trip generation rates were applied to the land uses proposed for the alternative.

Table 6.0-4 summarizes the residential alternatives in terms of jobs/housing balance. This table forecasts project population for each alternative. It goes on to estimate the total number of employed residents, along with the number of jobs expected to be created in the project area. Finally, it makes projections for employed residents working in the Tri-Valley area and working in Contra Costa County.

TABLE 6.0-1 CHARACTERISTICS OF PROJECT ALTERNATIVES

	Units	Population
Existing (1990)	120	371
Proposed Project	5,950	16,283
Alternative 1 - No Project	523 ¹	1569
Alternative 2 - Reduced Density-25%	4,485	10,800
Alternative 3 - Reduced Density-50%	2,967	7,207
Alternative 4 - Concentrated Development	3,887	9,418
Alternative 5 - Compact Alternative	$2,080^2$	5,052
Alternative 6 - Traffic Mitigation Alternative	3,662 - 6,200 ³	9,887 - 16,740
Alternative 7 - Off-Site Alternative	5,6274	15,200

¹ Based upon existing zoning; includes development approved for Wendt property. The development plans for that site show a total of 323 dwelling units.

TABLE 6.0-2
COMPARISON OF HOUSING MIX AND DENSITIES¹
Proposed Project and Selected Alternatives

Land Use Designation	Proposed Project	No Project	Reduced 25%	Reduced 50%	Concentrated Development	to the first of the contract of
Agriculture - 80-acre minimum	0	7	12	17	12	20
Agriculture - 5-acre minimum	0	113^{2}	80	49	118	60
Single-Family - Very Low (SV)	144	0	46	59	33	0
Single-Family - Low (SL)	291	0	125	364	253	146
Single-Family - Medium (SM)	2,451	0	1,622	868	1,131	509 ³
Single-Family - High (SH)	967	270^{2}	1,039	740	1,180	770
Multi-Family - Low (ML)	511	53 ²	598	203	380	53
Multi-Family - Medium (MM)	864	0	241		259	349
Mixed Use (Village Center)	722	0	722	666	521	227
Total	5,950	523	4,485	2,967	3,886	2,080

Dwelling unit by type.

Sources: TVPOA Development Unit Count Map, August 4, 1995; TVPOA Reduced Density Alternatives, November 19, 1996.

² The unit count assumes 2,000 dwelling units in the western portion of the planning area and approximately 80 units on agricultural land in the central and southern portions of the planning area.

³ 6,200 dwelling units include Wendt Ranch and Tassajara Meadows projects.

⁴ Proposed project minus 323 dwelling units assigned to Wendt Ranch.

² Parcels range from 5 to 20 acres.

³ Includes Wendt Ranch development.

TABLE 6.0-3 COMPARISON OF TRIP GENERATION

	Land Use		Transportation	on System	Trip G	leneration	Inters LC	
Alternative	Within Plan Area	Outside Plan Area	Within Plan Area	Outside Plan Area	AM¹	PM²	AM	PM
No Project ^{4,5}	Existing Zoning 80 additional units	2010 GP	2010 Network	2010 Network ⁶	300	400	3	5
Reduced Density-25%	25% Reduced 4,485 additional units ⁴	2010 GP	Modified Project Circulation System	2010 Network ^{6,7}	3,665	4,695	3	7
Reduced Density-50%	50% Reduced 2,967 additional units ⁴	2010 GP	Modified Project Circulation System	2010 Network ⁶	2,385	3,055	68	7
Concentrated Development	Concentrated Development 3,887 additional units ⁴	2010 GP	Modified Project Circulation System	2010 Network	2,940	3,770	48	7
Compact Alternative	2,000 dwelling units plus 80 additional ranchettes ⁴	2010 GP	Project Circulation System plus On-Site Mitigation	2010 Network	1,560	2,020	3	7
Off-Site Alternative	Existing Zoning 80 additional units	2010 GP Plus 5,627 ⁹ additional units in East Dublin	Expected Network	Expected Network	4,331	5,548	U ¹⁰	Π ₁₀

AM outbound (peak-direction) only.

² PM inbound (peak-direction) only.

Number of intersections operating at level of service E or F.

Includes Wendt Ranch project.

Based on ABAG Projections '92 information.

2010 Background Road System.

The off-site circulation system includes connections to Bollinger Canyon Road in Dougherty Valley, through the Town of Danville's Lawrence Road Specific Plan area. Such a connection is not part of the 2010 network system.

On-site modifications not as effective as 25% alternative.

Proposed project minus 323 units assigned to Wendt Ranch.

Unknown.

Source: ITE Trip Generation, 5th Edition, for residential uses;

Mills Associates, 1997.

TABLE 6.0-4
COMPARISON OF TASSAJARA VALLEY DEVELOPMENT AND JOBS/HOUSING BALANCE
Proposed Project and Selected Alternatives

Alternative		Tassajara Valley	y Forecast 2010¹	Tassajara Valley	Tri-Valley Employed	CC Countywide	
	Dwelling Units	Population	Employed Residents	Jobs	Employed Residents per Job Ratio	Residents per Job Ratio	Employed Residents per Job Ratio
Existing 1990 Baseline ²	120	371	217	31	7.00	1.08	1.48
Proposed Project	5,950	16,283	9,520	656	14.51	1.00	1.38
No Project ³	523	1,569	837	31	11.76	0.96	1.36
Reduced Density-25%	4,485	10,800	7,176	496	14.47	0.99	1.37
Reduced Density-50%	2,967	7,207	4,747	342	13.88	0.98	1.37
Concentrated Development	3,887	9,418	6,219	328	18.96	1.00	1.38
Compact Alternative	2,080	5,052	3,328	280	11.89	1.00	1.36
Off-Site Alternative ⁴	5,827	15,733	9,323	643	14.50	0.96	1.36

All project alternatives assume build out by 2010 for comparison purposes.

Sources: Tri-Valley Transportation Council (TVTC) Final Expected Growth Scenario, May 3 1995; TVPOA Land Use Data by Traffic Zone, November 16, 1995; Economics & Planning Systems, 1996.

All alternative dwelling unit counts include 120 existing households in the Tassajara Study Area: 96 within the project site and 24 in the traffic zone TAZ247.

The No Project Alternative includes the Wendt Ranch project and assumes 80 new dwelling units may be built in the Tassajara Valley by 2010.

⁴ The number of dwelling units excludes those units assigned to Wendt Ranch.

6.1 NO PROJECT ALTERNATIVE

Principal Characteristics

As required under CEQA, the "no project" alternative is presented to describe the existing setting, assuming that the existing conditions would remain unchanged. CEQA states that the No Project Alternative must describe what conditions or program preceded the project.

In this scenario, no development would occur on the site, with the exception of building out existing lots and the Wendt Ranch development. The existing uses, including rural residential and agriculture, along with the existing nonconforming commercial uses, would remain. The existing roads, as well as drainage conditions and wildlife habitat characteristics of the area, would remain unchanged. Development would continue to occur in the adjoining East Dublin Specific Plan.

Land Use and Planning Policy

The No Project Alternative would limit development to existing zoning and *General Plan* requirements. In addition to the Wendt Ranch development, existing zoning would permit some additional units, bringing the total number of dwelling units in the Tassajara Valley to approximately 523. Land uses would remain the same as existing uses, but development of 5- to 20-acre ranchettes would be allowed to continue. Land in Tassajara Valley would remain in agricultural production, but fragmentation of parcel size would result in loss of grazing land and the productive viability would diminish.

Geology/Seismicity/Soils

Excluding the Wendt Ranch development, the existing terrain features within the remaining planning area would not change and little or no grading would occur. The relatively few residences that would be constructed would be subject to the potential for adverse geologic, seismic and geotechnical problems identified in this EIR (see Section 4.2). There would be considerable flexibility in the siting of improvements, offering the opportunity to avoid most geologic and geotechnical hazards, except for expansive soils. The Building Inspection Department of the County has the authority, under their existing ordinance code, to trigger geologic and geotechnical reports. Grading permits are required for all projects which involve creating fills more than three feet thick on cuts more than five feet deep.

Flood Hazards/Drainage/Water Quality

Existing drainage and water quality would remain essentially unchanged from the prevailing conditions. Peak flows on Tassajara and Alamo Creeks at the County line would not change, nor would the total volume of runoff. Lands that are currently subject to inundation of the 100-year flood would continue to be flood prone.

In December 1996, the Board of Supervisors approved the Wendt Ranch General Plan Amendment and associated rezoning. The planned regional detention basin on Alamo Creek is a 15-acre-foot basin, located in the southwest portion of the Wendt property. It is the intent of the project proponent for the Wendt Ranch project to construct a smaller, project-specific basin in this area that would mitigate the runoff effects of the Wendt Ranch development. The developer's intent would be to control peak flows of the reach of channel immediately downstream from the site and to design the basin so that peak discharge from the 100-year flood at the County line would be at or below the pre-development level. It should be recognized that the concept of a regional detention basin on the Wendt Ranch property has not been invalidated by approval of the Final Development Plan. The Flood Control District may yet require a regional basin. In that case, the developer of Wendt Ranch may require some type of compensation for providing space to mitigate the drainage impacts of others.

Biological Resources

Excluding Wendt Ranch, only limited development would occur in the project area under this alternative, and potential impacts on biological resources would be substantially less. Most of the existing cover and associated wildlife habitat would be retained, with roadways, structures and ornamental landscaping replacing primarily grassland habitat with construction. Sensitive biotic features such as specimen trees, areas of woodland and riparian forest cover, raptor nests, and habitat for California red-legged frog, western pond turtle and other special-status taxa could still be adversely affected, depending upon specific building plans for each development. Adverse impacts associated with the Wendt Ranch development proposal would require implementation and mitigations recommended in the environmental findings on the project.

Traffic and Circulation

The on-site land use would develop in accordance with existing zoning, resulting in approximately 403¹ additional housing units. The off-site land use would be represented by the year 2010 *General Plan* land use. The transportation system would be represented by the year 2010 Background Road System Network.

The No Project Alternative would generate approximately 300 additional AM and 400 additional PM trips during the peak hour compared to the existing conditions. This alternative would create 4,470 fewer AM peak-hour and 5,710 fewer PM peak-hour trips than the project. (The trip generation levels of the project are 4,769 during the AM peak hour and 6,113 during the PM peak hour.)

Intersection Level of Service

The No Project Alternative would result in level of service E or F conditions at three intersections in the AM and five intersections in the PM peak hour. This alternative would therefore reduce the number

¹ Includes the recently approved Wendt Ranch project.

of intersections operating at level of service E or F by four in the AM and six in the PM peak hour when compared to the project. Most of this traffic is associated with through trips originating outside the project boundary.

Noise

This alternative would include development of the Wendt Ranch property located on the south side of Camino Tassajara west of Blackhawk Drive. This project has been the subject of a separate environmental review.² The Draft EIR for Wendt Ranch indicates that traffic noise levels would not substantially increase above existing levels as a result of the No Project Alternative, including the Wendt Ranch development. The site plan for the Wendt Ranch development proposes a 20-foot landscape buffer separating the nearest single-family residential lots from the future edge of Camino Tassajara. A noise barrier would be necessary, in addition to the 20-foot buffer, to reduce the future noise to within the County guidelines (L_{dt} to 60 dBA) at the proposed residential lots.

Air Quality

This alternative would have a far smaller potential for construction-phase nuisance impacts since the amount of development would be much smaller than for the proposed project.

Permanent air quality impacts would be roughly proportional to total daily vehicle trip generation. This alternative would generate only 10 percent of the daily trips of the proposed project, and air quality impacts would similarly decrease. This alternative would not have a significant local or regional air quality impact.

Visual Quality/Aesthetics

The rural visual character in the northwest portion of the planning area (across from Blackhawk), will change with implementation of the Wendt Ranch development proposal. The density and type of housing will be a continuation of what has occurred along Camino Tassajara to Sycamore Valley Road. However, the Wendt Ranch project does not provide the same 50-foot setback as what has occurred west of the site. The development plan calls for a 20-foot landscaped buffer. Maintaining the 50-foot setback would not only enhance the views along Camino Tassajara, but also would provide a better transition between the urban and rural setting of the valley floor.

Development under the existing zoning would be considerably less than what is proposed and the rural character of the valley would be maintained, although altered from the existing environment. The existing zoning does permit ranchette subdivisions which would fragment the open grazing lands that

² Draft Environmental Impact Report, Wendt Ranch General Plan Amendment and Related Actions, August 1996.

presently exist in the planning area. Additionally, unless design controls are a condition of project approval, the County does not review applications for rural residential character. Buildings could be sited in visually prominent hillside locations or on ridgetops.

Public Utilities

With the exception of providing water/sewer service to the recently approved Wendt property, there would be no demand to provide domestic water service facilities or sewerage and waste disposal service with this alternative. None of the impacts described in Section 4.9 would occur. There would be potential for failure of septic systems due to the relatively low permeability of soils within the project area. During drought years, there would be potential for temporary failure of private wells. It should be noted, however, that if the Wendt property and the proposed Tassajara Meadows project at the southeast corner of Lawrence Road/Camino Tassajara obtain water and wastewater service from the East Bay Municipal Utilities District (EBMUD) and Central Contra Costa Sanitary District (CCCSD), respectively, it would be reasonable to assume that the intervening properties could be served as well.

Public Services

Excluding the Wendt Ranch development, there would be no project-related demand for an urban level of public services in the remaining project area. Hence, the current level of demand for fire and police protection, schools, child care, emergency medical service, parks and recreation, road maintenance and other public services would remain essentially unchanged.

Cultural Resources

This alternative could result in fewer potential impacts to cultural resources on one site within the planning area. Only three known historic archeological sites exist within the valley. Two of these sites are located within the Wendt Ranch property, which was recently approved for development. The remaining site is located in an area that would be left undeveloped. The potential for direct or indirect disturbance of previously unknown archeological sites would be lessened as a result of reduced density as well.

Jobs/Population/Housing

Excluding the Wendt project, the Tassajara Valley has zoned residential capacity for about 200 dwelling units. Approximately 120 of these units already exist, and assuming a zero vacancy rate, these units provide shelter to 200 households. No further absorption of Tassajara Valley's remaining residential capacity is projected before 2010 under the expected growth scenario. About 130 additional jobs are forecast, which would raise total Tassajara Valley employment to 161 jobs under the No Project Alternative.

The projected numerical ratios of employed residents to jobs within the Tri-Valley region and Contra Costa County would decline slightly, compared to the proposed project alternative, going from 1.00 to 0.96 and 1.38 to 1.36, respectively (see Table 6.0-4). These figures represent a reduction of the County's "surplus" labor force, that is, of workers who would need to commute to jobs outside Contra Costa County. For the Tri-Valley region, the decline of the ratio below the 1.00 level indicates a possible shortfall of resident labor force relative to forecast employment under the No Project Alternative.

The proposed project would offer no new housing units affordable to lower-income households, but would increase demand for such units by providing employment to clerical, retail and service workers in on-site establishments serving the local population. The No Project Alternative would result in a smaller projected shortfall of housing affordable to lower-income groups, by only reducing housing demand, and not by increasing housing supply.

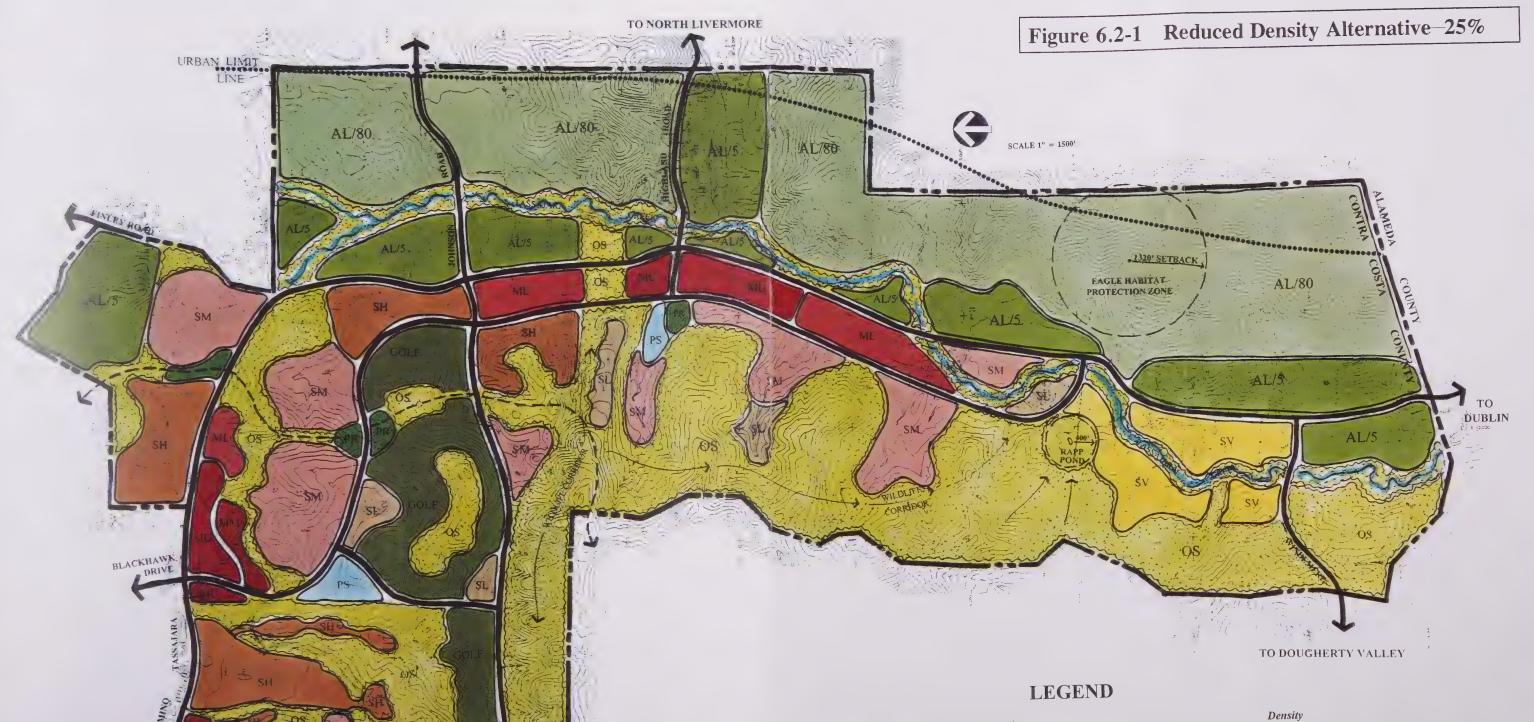
The effects of the No Project Alternative on the supply of housing units affordable to households having moderate- and middle-range incomes would be different, however. Without hundreds of new units priced for the middle-income ranges, as planned for the proposed project, the Tri-Valley portion of Contra Costa County is likely to have deficiencies in housing stock priced in the middle-cost ranges by 2010, compared to the demand for such housing by local workers. This reduced availability of housing, in the context of continued housing under-supply in the entire San Francisco Bay Area, would contribute to further upward pressure on prices for remaining development, as well as increased commuting.

6.2 REDUCED DENSITY-25 PERCENT ALTERNATIVE

Principal Characteristics

The 25 percent reduced density alternative is presented in Figure 6.2-1. This alternative is intended to achieve essentially all of the project sponsor's objectives outlined in Chapter 3. However, the residential lot yield of this alternative is approximately 4,486 units, as opposed to the 5,950 units in the proposed project. The mixed-use area would remain unchanged in terms of both its general location, acreage, and residential dwelling unit yield. The thrust of this alternative is to respond to impacts identified in the environmental impact report without invalidating the basic development concepts of the project proponents.

Perhaps the most significant environmental impact is the ability of the local road system linking the site with I-680 and I-580 to carry traffic generated by the project, along with cumulative traffic. This alternative shows road connections that are currently not a part of the major roads plan of the County General Plan. Specifically, it shows a western extension of Johnston Road from the existing terminus of the road at Camino Tassajara into the Lawrence Road Specific Plan area of the Town of Danville. The intent of this road extension is to provide a connection to Bollinger Canyon Road in Dougherty Valley. The road could take the form of a four-lane limited access arterial (for optimal efficiency) or a two-lane parkway. Additionally, two north-south arterials are shown, which provide linkage between Camino Tassajara and the Johnston Road extension. The westernmost of these north-south arterials is shown intersecting Camino Tassajara at its intersection with Shadow Creek Drive. This arterial extends



Land Use Designation	Description	Density Range (Net)	Acres	Dwelling Units	S.F. Commercial
AL/80	Agriculture - 80 ac. min. lot	(r) W (r)	995.3	12	gar sci-ore
AL/5	Agriculture - 5 ac. min. lot	m-m-	419.4	80	
SV	Single Family Very Low	0.2 to 0.9	123	46	
SV SL	Single Family Low	1.0 to 2.9	57.7	125	***
SM	Single Family Medium	3.0 to 4.9	441.4	1622	Security 100
SH	Single Family High	5.0 to 7.2	192.4	1039	
ML	Multi-family Low	7.3 to 11.9	82.2	598	
MM	Multi-family Medium	12.0 to 20.9	19.95	241	
MU	Mixed Use	wee	68.4	722	225,000
IVIU	WHACE OSC	TOTAL:	2,399.8	4,486	225,000

OTHER LAND USES

PS Public Schools
OS Open Space

PR Parks and Recreation

GOLF Golf Course

SOURCE: David Gates and Associates, 1996

TO DANVILLE

in a southerly direction for a distance of 1.2 miles, to its intersection with the proposed Johnston Road extension. The road network shown in the Reduced Density—25 Percent Alternative is designed for optimum efficiency and greatly reduces traffic impacts at the Crow Canyon/Camino Tassajara intersection. However, it does not eliminate all off-site traffic impacts and it conflicts with some adopted policies and approved plans. (The Town of Danville's Lawrence Road Specific Plan does not show either of these roads; the Dougherty Valley General Plan Amendment and Specific Plan do not show a road connection to the Lawrence Road Specific Plan area.) Thus, there are a number of planning issues that would need to be resolved for any road connection to be made through the Lawrence Road area and connecting into the Dougherty Valley.

In this alternative, an 18-hole golf course is shown in an area that is bounded by the Johnston Road extension on the south, and by Country Loop Road on the east and northeast. The easternmost of the proposed north-south arterials bisects the golf course. Another characteristic of this alternative is that its agricultural zoning would be retained on land east of Camino Tassajara. The valley floor areas east of Camino Tassajara are to be designated AL/5 (minimum parcel size 5 acres) and the upland areas are to be designated AL/80 (minimum parcel size 80 acres). All lands adjacent to Dougherty Valley are to be designated OS (Open Space). These lands would serve as watershed land and wildlife habitat. This alternative shows one north-south and two east-west wildlife movement corridors. Locally, the north-south corridor is only 200 feet wide. Key characteristics of this alternative are summarized below.

- Open Space. Approximately 46.7 percent of the planning area is designated OS, PR and Golf. Additionally, 22.2 percent is designated AL/80 and 9.3 percent is designated AL/5. When combined, these open space and rural land uses total 78.2 percent of the planning area. Urban land uses total 21.8 percent of the planning area.
- Ranchettes. The legend for Figure 6.2-1 estimates the plan could accommodate 12 ranchettes on 80+-acre parcels and 80 ranchettes on 5+-acre parcels. It is assumed that these 12 rural residences on the larger agricultural lands would rely on well water and leech fields for domestic water and disposal of wastewater, respectively, due to the distance from the main water and sewer lines.
- <u>Community Facilities</u>. In addition to four neighborhood parks, the plan shows two school sites. The northern site is approximately 14 acres; the southern site is approximately 9 acres. These may represent potential intermediate and elementary school sites, respectively. The northern school site fronts on two arterial streets, which is normally not desirable from a traffic safety and local circulation perspective. This plan does not include a community park, unlike the proposed project.
- <u>Village Centers</u>. The plan shows two village centers. The northern center, which is opposite the east gate entrance to Blackhawk, fronts for approximately 0.5 mile on the south side of Camino Tassajara. This mixed-use area is approximately 30 acres. The northwest corner of this village center encroaches on the channel of the East Fork, and the east portion of this

village center requires substantial grading (i.e., truncation of two ridges). The grading could be considered important from a general plan perspective because it involves grading slopes of greater than 26 percent, and Camino Tassajara is a scenic route. The southern village center is similar to the proposed project in terms of its acreage, location and constraints. It amounts to approximately 38 acres and fronts for 0.6 mile on the west side of Camino Tassajara at its intersection with Highland Road.

- <u>Flood Control</u>. When compared with the proposed project, this alternative has downscoped the amount of urban runoff in both the Alamo and Tassajara Creek watersheds. However, the changes would not avoid the need for detention basins, and the potential sites on the Foley parcel (Tassajara Creek) and Wendt parcel (Alamo Creek) would still be needed, although the size of the basins could be slightly reduced from the basin size needed to serve the proposed project.
- <u>Visual Quality</u>. This alternative has virtually eliminated ridgecrest development. The primary remaining visual quality issues are the nearly continuous development on both sides of Camino Tassajara (from the Finley Road intersection to the west boundary of the project); the truncating of ridges on the south side of Camino Tassajara (adjacent to the valley floor); and the nearly continuous development along Country Loop Road.
- Wendt Property. The land uses shown for the Wendt Ranch property acknowledge the land uses approved for that site by the Board of Supervisors in December 1996.

Land Use and Planning Policy

Many of the land use compatibility impacts associated with the proposed project would be eliminated under this alternative. Residential development adjacent to the urban limit line would be eliminated and the lands along the eastern project boundary would remain in Agriculture (AL/80). Along the south side of Highland Road, Agriculture (AL/5) would replace Single-Family Residential Medium Density housing. Agricultural land uses would continue along the eastern side of Camino Tassajara, south from Finley Road to the County line. AL/5 density would provide a transition between the urban densities on the west side of Camino Tassajara and the AL/80 agricultural densities along the eastern project boundary. This alternative also provides for an agricultural buffer at the County line to separate future urban development in East Dublin; a concern raised with the proposed project. Densities are decreased in the Multi-Family Residential Medium, Single-Family Residential Very Low, Low and Medium Densities, and increases occur in the Single-Family Residential High and Multi-Family Residential Low Densities. Higher density development is in the north/northwestern portion of the planning area. However, this alternative would also create potential land use incompatibility between the development and properties in the Lawrence/Lema Road area. Single-Family Residential Very Low Densities occur in the southwestern portion of the site. The open space acreage remains essentially the same as with the proposed project. However, the amount of park acreage has been substantially reduced with the elimination of the community park on Camino Tassajara. Excluding the AL/80 acreage (995 acres) and the AL/5 acreage (419 acres), the single-family and multi-family residential development under this alternative is substantially reduced from the proposed project.

The mixed-use areas remain the same as with the proposed project. Concerns expressed in the land use and visual sections pertaining to the commercial centers would not be eliminated with this alternative.

Geology/Seismicity/Soils

Geology

The geologic factors which influence the difficulty of hillside development include engineering properties of the bedrock unit and severity of landslide hazards. In the Tassajara planning area, most of the hillsides are within the outcrop belt of the Sycamore Formation (Tps), which consists of weakly consolidated mudstone and siltstone, with interbeds of sandstone, tuff and conglomerate. However, the extreme southern portion of the planning area is in the outcrop belt of the Tassajara Formation (Pta). This unit is younger and less consolidated than the Sycamore Formation, and is even more prone to slope stability problems. Moreover, the bedrock units that occur in the planning area are folded, faulted, locally sheared and in some areas the bedrock is deeply weathered. Because of these factors, an approach to development which reduces lot yield in the southern portion of the site and which retains more of the hillside area as open space could be considered to be more sensitive to geologic hazards.

Grading

In this alternative, the approach has been to reduce lot yield south of Highland Road, and construct an 18-hole golf course in the Phase 1 area. Lands east of Camino Tassajara are designated Agriculture (AL/80 & AL/5) and Open Space (OS). Similarly, the hillside area in the northernmost portion of the planning area is designated Agriculture (AL/5). Large lot development of this type allows the opportunity to carefully site rural roads, driveways and building sites in order to avoid the most hazardous areas. Development is concentrated on gently sloping land in the north portion of the property, and in hillside areas which take access from Country Loop Road and along the extension of Johnston Road west of Camino Tassajara. By concentrating hillside development in one area of the site, as is proposed by this alternative, there is economic capability to fully mitigate geologic hazards.

This alternative also shows extension of Johnston Road westerly into Lawrence Road planning area of the Town of Danville. Additionally, Shadow Creek Drive is extended south to intersect Johnston Road within the Lawrence Road planning area. The alignment of these roads outside the Tassajara planning area is intentionally made diagrammatic. A road connection to Bollinger Canyon Road in Dougherty Valley can be inferred from the road network shown. A limited access four-lane arterial could require significant grading, depending on the alignment selected.

No grading plans have been formulated for this alternative. It is anticipated that mass grading would be required for areas designated Single-Family Residential Low Density (SL) through multiple family, medium (MM), as well as for the golf course. For lands designated Single-Family Residential Very Low Density (SV), AL/80 and AL/5 custom grading of roads, driveways and building sites is anticipated. Based on this analysis, the amount of grading required for this alternative is substantially less than the grading needed to implement the proposed project, but more grading than is required for the Concentrated Alternative.

Seismicity

The seismic setting is unchanged. The earthquake damage potential is substantially reduced—by more than 25 percent, because the footprint of the development is constricted and avoids some of the most difficult areas of the site.

Flood Hazards/Drainage/Water Quality

This alternative substantially reduces the volume of urban runoff exiting the site and entering the channels of Alamo and Tassajara Creeks. Most of the reduced lot yield is in the Tassajara Creek watershed. Nevertheless, regional stormwater detention basins will be needed in both the Alamo Creek and Tassajara Creek watersheds and the sites considered for detention basins in the proposed project would remain appropriate. However, the size of the Foley basin could be reduced. By limiting development to the west side of Tassajara Creek, the runoff from the portion of the planning area east of the creek would continue to be typical of an agricultural area. Therefore, runoff from this area would not include chemicals characteristic of urban landscaping. Similarly, the runoff would lack road grease, oils and other substances characteristic of an urban community.

Biological Resources

A 25 percent reduced alternative would serve to partially alleviate adverse impacts on biological resources, reducing the extent of development in a number of important locations. These include: eliminating the proposed medium- and low-density residential development on several spur ridges and the upper end of valleys in Areas K and L³; eliminating portions of the high-density residential development on the spur ridge above Alamo Creek in Area B; and replacing the medium-density multiple-family and the medium and low-density single-family residential development with a 5-acre minimum lot size on the valley floor in Areas E, F, G and H. The reduction in grading and development would serve to protect a number of mature trees to be removed under the project as proposed, and would reduce the extent of grassland habitat converted to suburban development.

Intensive development to the west of Camino Tassajara and the valley floor in the northern portion of the project area would continue to limit wildlife movement and contribute to habitat fragmentation. The proposed extension of Johnston Road would interfere with wildlife movement along the Alamo Creek corridor in Area B unless provisions are included to provide a protected undercrossing location along an existing or created drainage. Pockets of high-density development on the hillside east of Alamo Creek on the Wendt Ranch in Area A would also disrupt the continuity of the recommended north-south wildlife movement corridor. Even the low-density development proposed west of Camino Tassajara may adversely affect habitat for sensitive wildlife species, depending on the sighting of structures and

See Figure 4.4-4 for a key to the areas referenced in this analysis.

relationship to movement corridors. A major east-west wildlife movement corridor has not been incorporated into this alternative, separating permanent open space in Hidden Valley from the undeveloped lands east of Tassajara. Measures recommended to reduce adverse impacts of the project as proposed would generally still apply to this alternative.

Traffic and Circulation

The project development would be primarily concentrated in the northern part of the proposed development plan and along Country Loop Road. The off-site land use would be represented by the year 2010 *General Plan* land use.

The on-site transportation system would be a modified version of the internal circulation system detailed in the project description. The circulation system would include a connection from Johnston Road extending southwest into Dougherty Valley. The on-site circulation would also provide for a north-south road connection between Camino Tassajara Road and Johnston Road extension. These road extensions would greatly improve the accessibility of the proposed development site when compared to the project. The off-site transportation system would be represented by the year 2010 Background Road System Network.

The 25 percent reduction alternative would generate approximately 3,665 additional AM and 4,695 additional PM trips during the peak hour compared to the existing conditions. This alternative would create approximately 1,100 fewer AM peak-hour and 1,420 fewer PM peak-hour trips than the project.

Intersection Level of Service

The 25 percent reduction alternative would result in level of service E or F conditions at three intersections in the AM and seven intersections in the PM peak hour. This alterative would therefore reduce the number of intersections operating at level of service E or F by four in the AM and four in the PM peak hour when compared to the project. The reduction in the number of congested intersections would be primarily attributable to the on-site roadway extensions, in particular the Shadow Creek extension, and the dispersement of the development proposed under this alternative.

Noise

This reduction in the number of dwelling units would not result in noise levels in the area that would be significantly different than the noise levels projected under the proposed project. While development would be concentrated in the northern part of the proposed development plan and along the Country Loop Road, single- and multiple-family residential development would still be distributed throughout the development plan along Camino Tassajara. While it is likely that this alternative would expose fewer future residents to noise levels above County guidelines, mitigation measures in terms of open space buffers or sound barriers along the major roadways would not be substantially different than for the proposed project.

Air Quality

A reduction in units would have less potential for construction-phase nuisance impacts since the amount of development would be smaller than for the proposed project. Construction-period impacts still would be considered potentially significant.

Permanent air quality impacts would be roughly proportional to total daily vehicle trip generation. This alternative would generate 75 percent of the daily trips of the proposed project, and air quality impacts would similarly decrease. This alternative would not have a significant local air quality impact. Regional impacts would exceed the significance thresholds of the Bay Area Air Quality Management District, so this alternative would have a significant and unavoidable effect on regional air quality.

Visual Quality/Aesthetics

This alternative provides many positive changes to the proposed plan. Grading of hilltops for residential units would be substantially reduced, including the SV and SM residential areas on the hills and adjacent to Camino Tassajara on the east side. These designations have been eliminated and replaced with AL/80, 80-acre minimum lot size, and AL/5, 5-acre minimum lot size land uses. Residential development also has been removed from the hilltops on the west side of the valley south of the proposed golf course.

Views along much of Camino Tassajara may be improved due to the land use change from SV residential to A-2, 5-acre minimum parcel size. This change may eliminate the need for sound walls along the east side of Camino Tassajara, although other noise alternative measures may be required, such as landscaped buffers and setbacks. More open space would be provided adjacent to the Country Loop Road with the removal of the SM residential development. The Country Loop Road would have a more open feeling and the extent of sound wall length on the south side would be reduced.

Development at the project's northwest entry would be more compatible with existing development because some residential densities adjacent to Camino Tassajara would be reduced from MM (Multifamily, medium density) to SM (Single-Family Residential Medium Density). The southern project entry would better satisfy County General Plan goals with the designation of agricultural land uses on both sides of Camino Tassajara at the County line. This would present a more scenic visual gateway to the County as well as provide a buffer between the East Dublin planning area and the Tassajara development.

Potential negative aspects of this alternative have been identified and if implemented, could produce visual/aesthetic impacts. The Camino Tassajara realignment at the southern end of the planning area would result in a less scenic visual relationship to Tassajara Creek because of the residential development sited between the roadway and the creek. With the change in land use designation from Parks and Recreation (PR) to Agriculture/5-acre minimum lot size (AL/5) on both sides of Highland

Road and further south on Camino Tassajara, open views along the roadway in these two locations would be eliminated. Potentially less open space character will result in the southeast portion of the site with the redesignation of Open Space areas to AL/80, Agriculture 80-acre minimum lot size. The AL/80 designation would permit a limited number of dwelling units, whereas the Open Space designation would preclude any development.

Public Utilities

If the Tassajara Meadows project is approved, coupled with the approval of the Wendt Ranch development, the Tassajara planning area will become fragmented. Specifically, the parcel in the northwest corner of the planning area will be bounded by Tassajara Meadows on the west and Wendt Ranch on the east. This portion of the Tassajara planning area would logically be served by the water and wastewater providers serving the other two developments. The EIRs prepared for the Tassajara Meadows and Wendt Ranch projects and the Preliminary Water Study prepared for the Wendt Ranch project (May 1996) conclude that EBMUD is the logical water service provider because of the sites' proximity to EBMUD's service area and existing water distribution system. The EIR also designated CCCSD as the proposed sewerage service provider. The service boundaries of both districts would have to be extended to incorporate the two sites by means of approvals of the districts board of directors, as well as the Contra Costa County LAFCO before either district could serve the developments. It is noted however, that EBMUD has taken the position, under its Policy 51, that it will not serve these developments until its Water Supply Management Program is in place, and EBMUD determines it can serve the developments with no impact on water quantity, quality, or cost to customers within its current service boundary.

If the entire project is served by DSRSD, the potable water demand, dry weather wastewater flow, and recycled water demand for the Reduced Density—25 Percent Alternative are presented in Tables 6.2-1, 6.2-2 and 6.2-3, respectively. The preliminary plan for the this alternative presented in Figure 6.2-1 reveals that the more intense development would be concentrated near the northern portion of the site and would occur in all three DSRSD pressure zones; therefore, the lengths of water distribution pipeline and the number and location of water storage tanks and booster pump stations probably would not be reduced. However, the capacities or sizes of the pump stations and tanks, and the diameters of the pipeline, would be slightly reduced, particularly in DSRSD Pressure Zone 2 at the southern end of the proposed project where only low-density land uses would be developed and the peak hour demand would be less. However, if EBMUD serves only the intervening and Wendt Ranch properties, and DSRSD serves the remainder of the planning area, the 25 percent reduced alternative would generate the following demand: potable water - 1.41 mgd, recycled water - 1.00 mgd, and wastewater - 0.78 mgd.

TABLE 6.2-1
AVERAGE POTABLE WATER DEMAND FOR REDUCED DENSITY-25 PERCENT ALTERNATIVE
AT BUILDOUT USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Type	Dwelling Units	People Per Unit ¹	Interior Water Use Per Person (gpd) ²	Interior Water Use Per Unit (gpd)	Interior Potable Water Use (gpd)	Acres	Irrigable Area (%) ³	Gallons Per Acre Per Day	Irrigable Area That Can Use Recycled Water (%) ³	Exterior Potable Water Use (gpd)	Total Potable Water Use (gpd)
sv	Single-Family Very Low	46	3.04	60	182	8,400	123	30	2,530	0	93,400	101,800
SL	Single-Family - Low	125	2.94	60	176	22,000	58	50	2,530	0	73,400	95,400
SM	Single-Family - Medium	1,622	2.94	60	176	285,500	441	60	2,280	0	603,300	888,800
SH	Single-Family - High	1,039	2.45	60	147	152,700	192	40	2,020	0	155,100	307,800
ML	Multi-Family - Low	598	1.96	60	118	70,600	82	50	2,020	0	82,800	153,400
MM	Multi-Family - Medium	241	1.75	60	105	25,300	20	40	2,020	80	3,200	28,500
MU	Mixed Use	772	1.54	60	92	66,400	68	25	2,020	90	3,400	69,800
AL/5	Agricultural/5-acre lots	80	3.04	60	182	14,600	419	107	2,530	0	106,000	120,600
PS	Public/Semi-Public ⁴	2	direct	ad-sale	400	800	20 ⁷	37	2,400	70	5,300	6,100
PR	Parks and Recreation ⁵	3			200	1,000	401	55	2,530	100	0	1,000
OS & AL/80	Open Space and AL/808		0	••	200	0	3,086	5	2,530	100	0	0
	TOTAL	4,4736			19.18	632,700	4,491			. Amari	1,109,900	1,652,600

Values provided by TVPOA.

Source: Carollo, 1994, and Mills Associates. Adjusted to reflect the Reduced Density-25 Percent Alternative.

² gpd = gallons per day.

Value provided by TVPOA by land use type. May vary by individual site.

Based on 2 subareas of public/semi-public development (2 connections) at 400 gpd each.

Based on 4 parks and 1 golf course (5 connections) at 200 gpd each.

Dwelling units only; does not include PS or PR land uses. Does not include development on Wendt Ranch.

Estimated by Mills Associates.

Agricultural/80-acre minimum lot size (AL/80) is the existing land use. This analysis assumes water will be supplied by existing private wells.

TABLE 6.2-2
AVERAGE DRY WEATHER WASTEWATER FLOW FOR REDUCED DENSITY—25 PERCENT ALTERNATIVE
AT BUILDOUT USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Description	Number of People	Base Wastewater Flow Per Person (gpd)	Total Base Wastewater Flow (gpd)	Number of Dwelling Units	Base Inflow and Infiltration Per Dwelling Unit (gpd)	Total Base Inflow and Infiltration (gpd)	Total Average Dry Weather Flow (gpd) ¹
sv	Single-Family - Very Low	140	60	8,400	46	60	2,800	11,200
SL	Single-Family - Low	368	60	22,100	125	60	7,500	29,600
SM	Single-Family - Medium	4,769	60	286,100	1,622	60	97,300	383,400
SH	Single-Family - High	2,546	60	152,800	1,039	60	62,300	215,100
ML	Multi-Family - Low	1,172	60	70,300	598	60	35,900	106,200
MM	Multi-Family - Medium	422	60	25,300	241	60	14,500	39,800
MU	Mixed Use	1,112	60	66,700	722	60	43,300	110,000
AL/5	Agricultural/5-acre lots	243	60	14,600	80	60	4,800	19,400
PS	Public/Semi-Public ²	••		800	2	60	100	900
PR	Parks and Recreation ³			1,000	5	60	300	1,300
OS & AL/80	Open Space and AL/80 ⁵			0	0	60	0	0
Total		10,772		648,100	4,473 ⁴		268,800	916,900

Average dry weather flow equals base wastewater flow plus base inflow and infiltration. gpd = gallons per day.

Source: Carollo, 1994, and Mills Associates. Adjusted to reflect the Reduced Density-25 Percent Alternative.

Based on 2 subareas of public/semi-public development (2 connections) at 400 gpd each.

Based on 4 parks and 1 golf course (5 connections) at 200 gpd each.

Dwelling units only; does not include PS and PR land uses. Does not include development on Wendt Ranch.

Agricultural/80-acre minimum lot size is the existing land use. This analysis assumes septic tanks will be used for wastewater treatment and disposal.

TABLE 6.2-3
AVERAGE RECYCLED WATER IRRIGATION REQUIREMENTS
FOR REDUCED DENSITY—25 PERCENT ALTERNATIVE
AT BUILDOUT USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Description	Acres ¹	Total Irrigation Water Use (gpd)	Fraction Met With Recycled Water (%)	Recycled Water Irrigation ² (gpd)
sv	Single-Family - Very Low	123	93,400	0	0
SL	Single-Family - Low	58	73,400	0	0
SM	Single-Family - Medium	441	603,300	0	0
SH	Single-Family - High	192	155,100	0	0
ML	Multi-Family - Low	82	82,800	0	0
MM	Multi-Family - Medium	20	16,200	80	13,000
MU	Mixed Use	68	34,300	90	30,900
AL/5	Agricultural/5-acre lots	419	106,000	0	0
PS	Public/Semi-Public	20^{3}	17,800	90	16,000
PR	Parks and Recreation	401	558,000	100	558,000
OS & AL/80	Open Space and AL/80	3,086	390,400	100	390,400
Total		4,491	2,130,700	47	1,008,300

¹ Does not include Wendt Ranch acreage.

Source: Carollo, 1994, and Mills Associates. Adjusted to reflect the Reduced Density-25 Percent Alternative.

The land uses for the proposed development and this alternative differ at various locations within the site, which may also affect the capacities or sizes of the water distribution system components. The capacity of the required water treatment plant and transmission pipelines from the South Bay Aqueduct to the Tassajara Valley may be reduced in a similar manner as the water distribution system components. This would depend upon whether water treatment and transmission is provided by DSRSD or through the Zone 7 facilities.

² Estimated average daily use.

³ Estimated by Mills Associates.

Since the development would occur in three water pressure zones, and recycled water storage tanks, booster pump stations, and distribution pipelines would be required to serve these zones, the lengths of pipelines and number of tanks and pump stations would not be reduced. The sizes and capacities of the facilities would be slightly less, however.

The location and lengths of sewers would not be reduced. Since the sizes of the sewers and the capacity of the sewage pump station required to serve a portion of the development are based on a peak storm-related flow of 5 mgd, which is relatively independent of the density of development, the diameters of the sewers and the capacities of the pumps probably would not be reduced. The sizes and capacities of existing or new off-site wastewater conveyance, treatment, and disposal facilities required to serve the development may be slightly less.

Public Services

The impacts of this alternative on public facilities and services would be comparable to the proposed project. Only two school sites are included rather than three as proposed with the project. While not identified, it is assumed that the two sites would accommodate both an elementary and intermediate school. Under this alternative, the project would generate the following number of students:

Grades	Reduced Density-25%	Proposed Project
K-5	1,033	1,366
6-8	485	641
9-12	809	1,068

As stated in Section 4.10, the District builds schools to accommodate 540 elementary students and 900 middle school students. Unless both school sites identified on the site plan (Figure 6.1-1) are considered for elementary use, this alternative would fall short in providing a sufficient number of elementary school sites. Also, if both sites are utilized for grade schools, middle school students would have to attend other middle schools in the District. Identification of middle schools would depend upon capacity at the time.

The Growth Management Element prescribes response times for emergency services. Consequently, a fire station and a sheriff's substation would be needed to provide an urban level of service. Hence, compared to the proposed project, this alternative does not modify the facilities required for emergency

service providers. It is assumed the existing fire station would be retained, although it is not shown on the site plan. There is no space allocated for a sheriff's substation, library or community center. Park acreage has been substantially reduced and the community park eliminated. Without an on-site community park, population projected under this alternative would significantly impact existing recreational facilities in the Town of Danville.

Cultural Resources

This alternative could result in direct impacts to archeological site CA-CCo-695. The other two sites identified for the project are located within the Wendt Ranch development. This site is located in an area designated Single-Family Residential Medium Density (3.0 to 4.9 units/acre). This may constitute a potentially significant impact depending upon the outcome of the significance evaluation prepared for the identified cultural resource site.

Jobs/Population/Housing

The Tassajara Valley would contain 4,485 households and provide 496 jobs at project buildout (see Table 6.0-4). This alternative represents a 25 percent reduction in the intensity of residential land uses, as well as a 25 percent reduction in the gross floor area of commercial uses. Thus, the reduction in resident labor force would be proportional to the reduction in local jobs and the ratio of employed residents per job would decline slightly. This alternative would have no significant effect on the Tri-Valley regional or Contra Costa countywide ratios of resident labor force to employment.

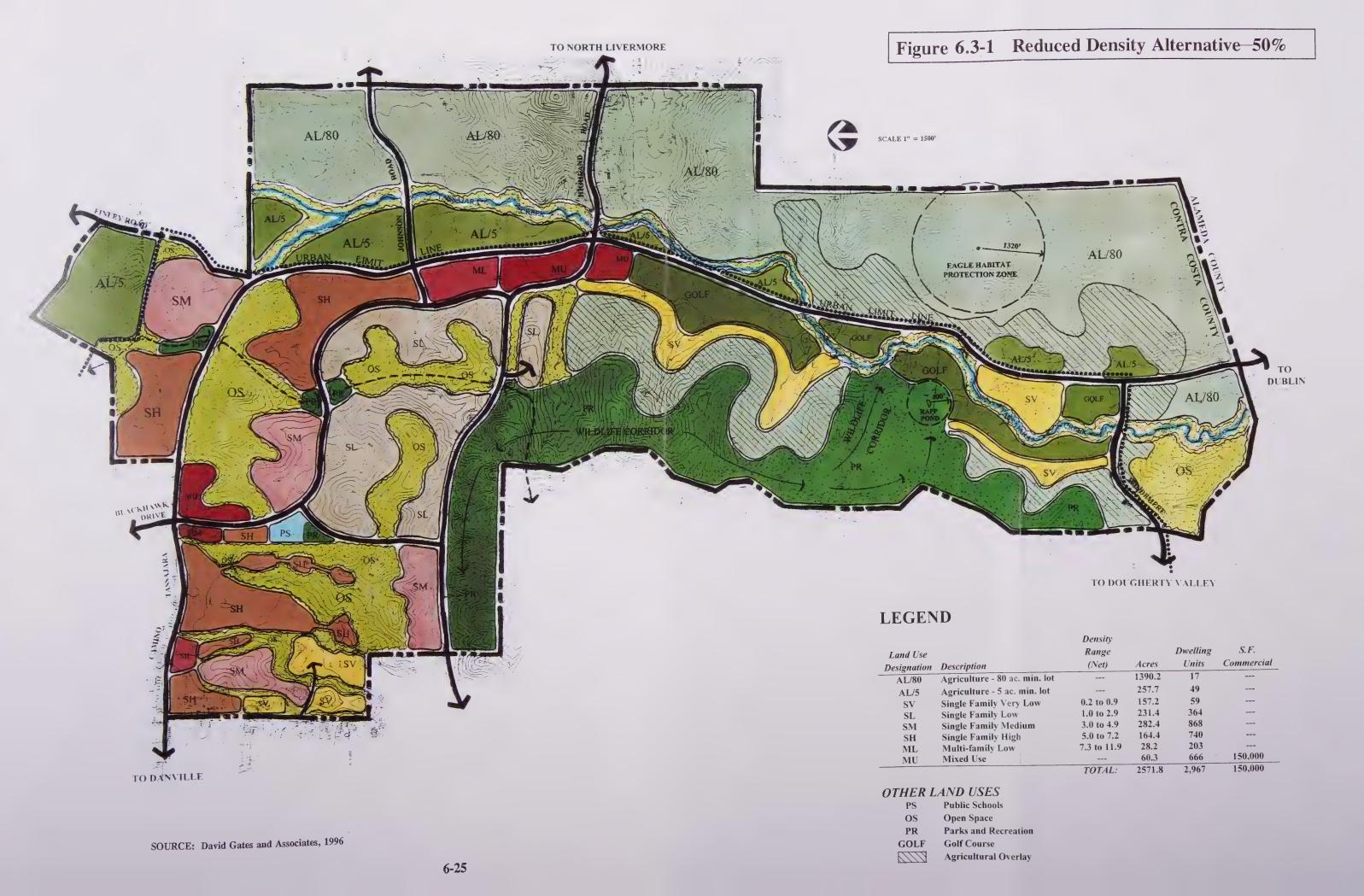
The 25 percent overall reduction in development density would not affect all proposed housing types equally (see Table 6.0-2). Housing in the highest density ranges—multiple family medium density and mixed-use categories—would be reduced from 1,586 to 963, a 40 percent reduction. By contrast, the Multi-Family Residential Low Density and Single-Family Residential High Density categories would actually increase from 1,478 to 1,637, while the lowest categories would drop from 435 to 263.

As a result of these changes, the amount of moderate priced housing and higher priced housing would be reduced out of proportion to the change in overall project density, and more housing would be targeted to middle-income households than the project proposal.

6.3 REDUCED DENSITY-50 PERCENT ALTERNATIVE

Principal Characteristics

The 50 percent reduced density alternative is presented in Figure 6.3-1. This alternative, while not achieving all of the project sponsor's objectives, provides more flexibility in the siting of residential development. Thereby it provides opportunities to mitigate significant impacts. The residential lot yield in the alternative is 2,967 units, as opposed to the 5,950 units in the proposed project. Mixed land use would also be reduced by approximately 8 acres (from 68 acres in the proposed project to 60.3 acres



in this alternative) and dwelling units in the mixed-use area would be reduced from 722 to 666 dwelling units. The thrust of this development concept is to concentrate development in the north portion of the Tassajara project area (i.e., north of Highland Road). In the south portion of the planning area, development is limited to an 18-hole golf course, located along the west side of Camino Tassajara, with estate residences adjacent to the golf course (157 acres designated SV). The hillside areas are designated AL/80 (agricultural land that is to be zoned for a minimum parcel size of 80 acres); AL/5 (agricultural land that is to be zoned for a minimum parcel size of 5 acres); PR (Park and Recreation land that is adjacent to the Hidden Valley open space in Dougherty Valley; and OS (Open Space). The plan includes a north-south wildlife movement corridor. For the southern village center, which is located at the Highland Road/Camino Tassajara intersection, potential land uses include residences (e.g., senior housing, affordable housing), medical offices, and other commercial uses that do not require a concentrated urban population.

The circulation system includes—in addition to the Country Loop Road—an east-west arterial that extends from the Lawrence Road area easterly to intersect Country Loop Road, approximately 800 feet north of the Country Loop Road/Camino Tassajara intersection. Of the 2,967 dwelling units, approximately 90 percent are in the north portion of the planning area (i.e., north of the proposed east-west arterial). The development concept for the north portion of the planning area includes open space on the south side of Camino Tassajara for a distance of more than 1 mile (from the northern village center to a point southeast of the Finley Road intersection). Development in the northwest quadrant of the Finley Road/Camino Tassajara intersection is limited to the gently sloped areas. The hilly upland area would be designated AL/5, where the minimum standard parcel size would be 5 acres. Land uses shown for Shapell's Wendt Ranch project are consistent with the uses currently proposed. Key features of the Reduced Density—50 Percent Alternative are summarized below.

- Open Space. Approximately 42.5 percent of the planning area is designated OS, PR and Golf. Additionally, 31 percent is designated AL/80 and 5.7 percent is designated AL/5. When combined, these open space and rural land uses total 79.2 percent of the planning area. Urban land uses total 20.8 percent of the planning area.
- Ranchettes. The legend for this alternative estimates the plan could accommodate 17 ranchettes on 80+-acre parcels and 49 ranchettes on 5+-acre parcels. It is assumed that the 17 ranchettes on the larger agricultural lands would rely on well water and leech fields for domestic water and disposal of wastewater, respectively, due to the distance from the main sewer and water lines.
- <u>Community Facilities</u>. In addition to the large area designated PR, which adjoins Dougherty Valley, the plan shows four neighborhood parks, along with one (elementary) school site.
- <u>Village Centers</u>. The plan continues to show two village centers. The northern center is located opposite the Blackhawk Drive/Camino Tassajara intersection. It is an irregularly shaped area of less than 20 acres that fronts for approximately 1,400 feet on the east side of Country Loop Road. The southern village center fronts for approximately 3,000 feet on the west side of Camino Tassajara in the vicinity of the Highland Road intersection.

- <u>Flood Control</u>. Most of the reduction in development potential in this alternative is in the Tassajara Creek watershed. Because of the reduced impact of the project on the runoff characteristics of Tassajara Creek, a regional flood control detention basin on the Foley property may no longer be required. Instead, one or more project-specific detention basins may be proposed within the planning area. The potential location of such basins are not shown on this alternative plan. However, the hydrologists for the project proponents have analyzed several potential sites within the Tassajara Creek watershed (see Figure 4.3-20).
- <u>Visual Quality</u>. This alternative has eliminated all ridgecrest development, except for ranchettes, in the southern portion of the planning area. This is also true for lands in the northwest quadrant of Finley Road/Camino Tassajara. The only area of mass grading is in the proposed development along Country Loop Road, where some ridgecrest units are shown.

Land Use and Planning Policy

Most of the development has been placed to the south and west of Camino Tassajara, eliminating potential land use conflicts with agricultural lands. It also provides for an agricultural buffer from the future urban development in East Dublin. Development is concentrated in the north/northwestern portion of the planning area, similar to the 25 percent reduction. The golf course is relocated to the central portion of the planning area, west of Camino Tassajara. Open space lands west of Camino Tassajara have been redesignated as park/recreation in keeping with the future alignment of the East Bay Regional Park District (EBRPD) ridge trail. The Highland Road mixed-use area has been reduced in size, however, visual and land use concerns identified for the proposed project would remain under this alternative.

The site plan for this alternative depicts an alternative urban limit line alignment which essentially follows Camino Tassajara, Finley Road and Windemere Parkway. Agricultural lands east of Camino Tassajara would be outside the urban limit line.

Geology/Seismicity/Soils

Geology

The geologic factors which influence the difficulty of hillside development include engineering properties of the bedrock unit and severity of landslide hazards. In the Tassajara planning area, most of the hillsides are within the outcrop belt of the Sycamore Formation (Tps), which consists of weakly consolidated mudstone and siltstone, with interbeds of sandstone, tuff and conglomerate. However, the extreme southern portion of the planning area is in the outcrop belt of the Tassajara Formation (Pta). This unit is younger and less consolidated than the Sycamore Formation, and is even more prone to slope stability problems. Moreover, the bedrock units that occur in the planning area are folded, faulted, locally sheared and in some areas the bedrock is deeply weathered. Because of these factors, an approach to development which reduces lot yield in the southern portion of the site and which retains more of the hillside area as open space could be considered to be more sensitive to geologic hazards.

Grading: Southern Portion of Planning Area

Like the Reduced Density Alternative—25 Percent, this alternative de-emphasizes development east of Camino Tassajara, as well as de-emphasizing development south of the Highland Road/Camino Tassajara intersection. Specifically, the Reduced Density Alternative shows an 18-hole golf course on generally level valley bottom land along the west side of Camino Tassajara (south of the Highland Road/Camino Tassajara intersection). Approximately 157 acres of lands designated Single-Family Residential Very Low Density (SV) are shown adjacent to the golf course. These lots would either be on the valley floor or on the lower slopes of the hills that define the west side of the Tassajara Creek Valley. On the east side of Camino Tassajara (south of the Highland Road intersection), four small areas are shown for rural residential use (AL/5). These areas are either on the valley floor or lower slope areas. The upland areas east of Camino Tassajara are shown as AL/80 (minimum parcel size of 80 acres), some of which has an agricultural overlay. Upland areas west of Camino Tassajara are designated AL/80 (with an agricultural overlay), as well as Parks and Recreation (PR) and Open Space (OS). The location of areas designated for residential appears to provide flexibility in the siting of residences to avoid/minimize potential for geologic hazards.

The amount of grading needed in the southern half of the Tassajara planning area is relatively minor, because no hillside development is planned. Some terracing would be required to establish a commercial agricultural use, such as vineyards, in the agricultural overlay lands. Only minor grading would be required for custom built homes.

Grading: Northern Portion of Planning Area

This alternative provides for residential development along both sides of Country Loop Road over most of its length. Mass grading would be required for the development and no grading plans have been prepared. However, the volume of grading is anticipated to be on the order of one-third the amount of that needed to implement the proposed project for this portion of the site.

The Reduced Density Alternative—50 Percent also shows Highland Road being extended westerly to the Lawrence Road planning area in the Town of Danville. It is inferred to be a limited access four-lane parkway that would provide linkage to Bollinger Canyon Road in Dougherty Valley. The precise alignment outside the Tassajara planning area is not shown since it would be subject to negotiation with all interested parties. In the Tassajara planning area, the road is shown on the valley floor where required grading would not be substantial. However, in the Lawrence Road planning area there is potential for significant grading impacts.

In the northwest quadrant of the Finley Road/Camino Tassajara intersection, development is concentrated on areas of relatively gentle slope. The upland area is designated AL/5, which suggests that custom-built homes and minor grading would characterize development in this area.

Seismicity

The seismic setting is unchanged from the proposed project. The earthquake damage potential is substantially reduced—by more than 50 percent because the footprint of development is constructed and avoids some of the most difficult areas of the site.

Flood Hazards/Drainage/Water Quality

This alternative is similar to the Reduced Density Alternative—25 Percent. Development in the Tassajara Creek watershed is reduced by one-third from that shown in the proposed project. Consequently, one or more project-specific basins are viable (in lieu of a regional basin located higher in the watershed than the project). Potential sites include the Mid-Valley and Camino Tassajara basins, which are shown schematically in Figure 4.3-4.

In the Alamo Creek watershed, the developers of the Wendt Ranch and Tassajara Meadows projects have proposed a small, project-related detention basin, rather than participate in a larger, regional basin. It appears that a similar approach could be pursued for other land development projects in the northern half of the Tassajara planning area. Nevertheless, the amount of development proposed in the Alamo Creek watershed is essentially identical to the proposed project and the best solution remains a regional detention basin of 15-acre feet (or larger), which would be located in the southwest corner of the Wendt property.

Biological Resources

Although the overall intensity of development would be reduced under this alternative, residential and agricultural uses have been expanded into several areas designated as Open Space in the proposed project and in the Reduced Density—50 Percent Alternative. Intensive multiple-family residential development would obstruct wildlife movement across the valley floor in Area L,⁴ which was intended to serve as one of the major east-west movement corridors in the project as proposed. An intensively managed golf course and agricultural designations would border much of the valley floor along Tassajara Creek south of Highland Road, with very low-density residential development obstructing wildlife movement in all but the middle (Area K) and southern (Area I) boundary of the valley floor. Medium- and high-density residential development would extend into areas designated for Open Space east of Alamo Creek in the Wendt Ranch and the western portion of Area B, together with the extension of Johnston Road, would further interfere with wildlife movement along the Alamo Creek corridor. The low-density development proposed outside the urban limit line may adversely affect habitat for sensitive wildlife species, depending on the sighting of structures and relationship to movement corridors. An unobstructed east-west movement corridor is still missing from this alternative.

⁴ See Figure 4.4-4 for a key to the areas referenced in this analysis.

While the substantial reduction in overall density could provide adequate opportunities to mitigate adverse impacts on biological resources through avoidance and enhancement of open space areas, this alternative falls short of accomplishing this goal. Measures recommended to reduce adverse impacts of the project as proposed would generally still apply to this alternative.

Traffic and Circulation

A 50 percent reduction in project development density would reduce the number of proposed housing by 3,000 units. The on-site land use would then consist of approximately 3,200 additional housing units. The project development would primarily be situated in the northern part of the proposed development plan. The off-site land use would be represented by the year 2010 General Plan land use.

The on-site transportation system would be a modified version of the internal circulation systems detailed in the project description. The circulation system would include extending Highland Road, west of Camino Tassajara, through the proposed project area into Dougherty Valley. The internal circulation system south of Highland Road as proposed by the project would be removed. The on-site circulation would improve the accessibility of the proposed development when compared to the project. The off-site transportation system would be represented by the year 2010 Background Road System Network.

The 50 percent reduction alternative would generate approximately 2,385 additional AM and 3,055 additional PM trips during the peak hour compared to the existing conditions. This alternative would create approximately 2,385 fewer AM peak-hour and 3,055 fewer PM peak-hour trips than the project.

Intersection Level of Service

The 50 percent reduction alternative would result in level of service E or F conditions at six intersections in the AM and seven intersections in the PM peak hour. This alternative would therefore reduce the number of intersections operating at level of service E or F by one in the AM and four in the PM peak hour when compared to the project. Despite a development reduction of 50 percent, a large number of intersections would still operate under E and F conditions. It should be noted that seven of the thirteen intersections would operate with v/c ratios of .92 or better, thus barely exceeding the .89 v/c threshold. Although the Johnston Road extension would provide additional capacity to the transportation system, this new (east-west) roadway would not be as effective as the (north-south) Shadow Creek extension proposed in the 25 percent reduction alternative.

Noise

A reduced density of 50 percent would not result in noise levels in the Tassajara area that would be substantially different than the noise levels projected under the proposed project. This conclusion results from the relatively small percentage difference between total cumulative trips in the future with the project and total cumulative trips in the future under the 50 percent reduction alternative. This

alternative concentrates residential development in the northern part of the development plan area. The only residential development proposed south of Highland Road would be a multi-family residential development at the intersection of Tassajara Road and Highland Road and one low-density residential development area just north of the Windemere intersection. Most of the plan adjacent to Camino Tassajara is either proposed as agricultural land, golf course or open space. The requirements for noise barriers and other noise control treatments for residential areas would be substantially reduced under this alternative.

Air Quality

This alternative would have a lesser potential for construction-phase nuisance impacts since the amount of development would be smaller than for the proposed project. However, construction-period impacts would be considered potentially significant.

Permanent air quality impacts would be roughly proportional to total daily vehicle trip generation. This alternative would generate 50 percent of the daily trips of the proposed project, and air quality impacts would similarly decrease. This alternative would not have a significant local air quality impact. Regional impacts would exceed the significance thresholds of the Bay Area Air Quality Management District, so this alternative would have a significant effect on regional air quality.

Visual Quality/Aesthetics

This alternative concentrates most of the development on the northern portion of the planning area, west of Camino Tassajara and north of Highland Road. Some SV (very low) residential use would be provided adjacent to the golf course in the southern half of the project site.

There are many positive changes associated with this alternative. Grading of hilltops for residential units would be substantially reduced. Specifically, SV and SM residential areas on the hills adjacent to Camino Tassajara on the east side of the valley have been eliminated and replaced with agricultural land use designations. Residential development has been removed from the hilltops on the west side of the valley south of the proposed golf course.

This plan provides more open space adjacent to Camino Tassajara. Most development along the roadway south of Highland Road has been replaced with AL/5 (agriculture - 5-acre minimum lot size) and a golf course. This will enhance views to the valley hillside with the removal of development near the roadway. Furthermore, the rural character of the area could be enhanced by the Viticulture/Orchard Crop Overlay zone.

Reducing densities from MM (multi-family, medium density) to SH (Single-Family Residential High Density) would be somewhat more compatible with existing development at the project's northwest entry. East of Blackhawk Drive, more open space would be located adjacent to Camino Tassajara with

the reduction in size of the Mixed Use Village Center and adjacent MM residential use. This would provide more open space land immediately adjacent to Camino Tassajara. Residential development on the hillside overlooking the Mixed Use Village Center at Blackhawk Drive would be reduced in size, providing more open space view area from Camino Tassajara.

As with the 25 percent reduction, this alternative also would better satisfy County General Plan goals at the southern boundary of the site by producing a more scenic visual gateway to the County.

The negative aspects of this plan are the same as with the 25 percent alternative; the realignment of Camino Tassajara in the south end of the planning area and the potential for houses and roadways to be constructed in the area redesignated AL/80 east of the roadway.

Public Utilities

The potable water demand, dry weather wastewater flow, and recycled water demand for the 50 percent reduced density alternative are presented in Tables 6.3-1, 6.3-2, and 6.3-3, respectively. The preliminary plan for the Reduced Density—50 Percent Alternative, shown in Figure 6.3-1, reveals that the more intense development would be concentrated near the northwest portion of the proposed project site and would occur in all three DSRSD water distribution pressure zones; therefore, the lengths of pipeline and number and location of water storage tanks and booster pump stations probably would not be changed from the proposed project. However, the capacities or sizes of the pump stations and tanks and the diameters of the pipelines would be reduced, particularly in DSRSD Pressure Zone 2 at the southern end of the proposed project site where only low-density land uses would be developed, and the peak hour demand would be less.

If EBMUD and CCCSD serve the property adjacent to Wendt Ranch as discussed in the Reduced Density—25 Percent Alternative and DSRSD serves the remaining project area, this alternative would generate the following demand: potable water - 1.24 mgd, recycled water - 0.68 mgd, and wastewater - 0.51 mgd.

The land uses for the proposed development and this alternative differ at various locations within the project site, which may also affect the capacities or sizes of the water distribution system components. The capacity of the required water treatment and transmission pipelines from the South Bay Aqueduct to the Tassajara Valley project may be reduced in a manner similar to the water distribution system components depending on whether water treatment and transmission is provided by DSRSD or through Zone 7 facilities.

Since the development would occur in three pressure zones, and recycled water storage tanks, booster pumping stations and distribution pipelines would be required to serve these zones, the lengths of pipeline and number of tanks and pumping stations would not be reduced. However, the sizes and capacities of the facilities would be slightly reduced.

TABLE 6.3-1
AVERAGE POTABLE WATER DEMAND FOR REDUCED DENSITY—50 PERCENT ALTERNATIVE
AT BUILDOUT USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Type	Dwelling Units	People Per Unit ¹	Interior Water Use Per Person (gpd) ²	Interior Water Use Per Unit (gpd)	Interior Potable Water Use (gpd)	Acres	Irrigable Area (%) ³	Gallons Per Acre Per Day	Irrigable Area That Can Use Recycled Water (%)3	Exterior Potable Water Use (gpd)	Total Potable Water Use (gpd)
sv	Single-Family - Very Low	59	3.04	60	182	10,700	157	30	2,530	0	119,200	129,900
SL	Single-Family - Low	364	2.94	60	176	64,100	231	50	2,530	0	292,200	356,300
SM	Single-Family - Medium	868	2.94	60	176	152,800	282	60	2,280	0	385,800	538,600
SH	Single-Family - High	740	2.45	60	147	108,800	164	40	2,020	0	132,500	241,300
ML	Multi-Family - Low	203	1.96	60	118	24,000	28	50	2,020	0	28,300	52,300
MM	Multi-Family - Medium	0	1.75	60	105	0	0	40	2,020	80	0	0
MU	Mixed Use	666	1.54	60	92	61,300	60	25	2,020	90	3,000	64,300
AL/5	Agricultural/5-acre lots	49	3.04	60	182	8,900	258	10	2,530	0	65,300	74,200
PS	Public/Semi-Public ⁴	1			400	400	67	37	2,400	70	1,600	2,000
PR	Parks and Recreation ⁵	5			200	1,000	179	55	2,530	100	0	1,000
OS & AL/80	Open Space and AL/808		0		200	0	3,126	5	2,530	100	0	0
	TOTAL	2,9496				432,000	4,491				1,027,900	1,459,900

Values provided by TVPOA.

Source: Carollo, 1994, and Mills Associates. Adjusted to reflect the Reduced Density-50 Percent Alternative.

gpd = gallons per day.

Value provided by TVPOA by land use type. May vary by individual site.

Based on 1 subarea of public/semi-public development (1 connection) at 400 gpd.

Based on 4 parks and 1 golf course (5 connections) at 200 gpd each.

Dwelling units only; does not include PS or PR land uses. Does not include Wendt Ranch development.

Estimated by Mills Associates.

Agricultural/80-acre minimum lot size is the existing land use. This analysis assumes water will be supplied by existing private wells.

TABLE 6.3-2
AVERAGE DRY WEATHER WASTEWATER FLOW FOR REDUCED DENSITY—50 PERCENT ALTERNATIVE
AT BUILDOUT USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Description	Number of People	Base Wastewater Flow Per Person (gpd)	Total Base Wastewater Flow (gpd)	Number of Dwelling Units	Base Inflow and Infiltration Per Dwelling Unit (gpd)	Total Base Inflow and Infiltration (gpd)	Total Average Dry Weather Flow (gpd) ¹
sv	Single-Family - Very Low	179	60	10,700	59	60	3,500	14,200
SL	Single-Family - Low	1,070	60	64,200	364	60	21,800	86,000
SM	Single-Family - Medium	2,552	60	153,100	868	60	52,100	205,200
SH	Single-Family - High	1,813	60	108,800	740	60	44,400	153,200
ML	Multi-Family - Low	398	60	23,900	203	60	12,200	36,100
MM	Multi-Family - Medium	0	60	0	0	60	0	0
MU	Mixed Use	1,026	60	61,600	666	60	40,000	101,600
AL/5	Agricultural/5-acre lots	149	60	8,900	49	60	2,900	11,800
PS	Public/Semi-Public ²			400	1	60	100	500
PR	Parks and Recreation ³		~*	1,000	5	60	300	1,300
OS & AL/80	Open Space and AL/80 ⁵		~~	0	0	60	0	0

Average dry weather flow equals base wastewater flow plus base inflow and infiltration. gpd = gallons per day.

Source: Carollo, 1994, and Mills Associates. Adjusted to reflect the Reduced Density-50 Percent Alternative.

Based on 1 subarea of public/semi-public development (1 connection) at 400 gpd.

Based on 4 parks and 1 golf course (5 connections) at 200 gpd each.

Dwelling units only; does not include PS or PR land uses. Does not include Wendt Ranch development.

Agricultural/80-acre minimum lot size (AL/80) is the existing land use. This analysis assumes septic tanks will be used for wastewater treatment and disposal.

TABLE 6.3-3
AVERAGE RECYCLED WATER IRRIGATION REQUIREMENTS
FOR REDUCED DENSITY—50 PERCENT ALTERNATIVE
AT BUILDOUT USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Description	Acres¹	Total Irrigation Water Use (gpd)	Fraction Met With Recycled Water (%)	Recycled Water Irrigation ² (gpd)
SV	Single-Family - Very Low	157	119,200	0	0
SL	Single-Family - Low	231	292,200	0	0
SM	Single-Family - Medium	282	385,800	0	0
SH	Single-Family - High	164	132,500	0	0
ML	Multi-Family - Low	28	28,300	0	0
MM	Multi-Family - Medium	0	0	80	0
MU	Mixed Use	60	30,300	90	27,300
AL/5	Agricultural/5-acre lots	258	65,300	0	0
PS	Public/Semi-Public	6 ³	65,300	90	3,700
PR	Parks and Recreation	179	249,100	100	249,100
OS & AL/80	Open Space and AL/80	3,126	395,400	100	395,400
Total		4,491	1,703,400	40	675,500

¹ Does not include Wendt Ranch property.

Source: Carollo, 1994, and Mills Associates. Adjusted to reflect the Reduced Density-50 Percent Alternative.

The location and lengths of sewers would not be reduced. Since the sizes of the sewers and the capacity of the sewage pump station required to serve a portion of the development are based on a peak storm-related flow of 5 mgd, which is relatively independent of the density of development, the diameters of the sewers and the capacities of the pumps probably would not be reduced. The sizes and capacities of existing or new off-site wastewater conveyance, treatment, and disposal facilities required to serve the development may be less.

² Estimated average daily use.

³ Estimated by Mills Associates.

Public Services

In this alternative, the student generation potential would be 50 percent of the proposed project and broken out as follows:

Grades	Reduced Density-50%
K-5	698
6-8	334
9-12	553

Figure 6.3-1 shows only one school site, presumably an elementary facility. New elementary schools are constructed to accommodate a 540-student capacity. Based upon the above projections, a second elementary school would be required to accommodate children from this project, Wendt Ranch and Tassajara Meadows (assuming the latter project is approved), or the excess number may need to be absorbed into existing schools. This would depend upon capacity in the District at the time the alternative is built out. Middle and high school students would attend existing facilities within the District, thereby potentially creating overcrowded conditions at existing schools.

This alternative would require seven additional patrol officers and one-and-one-half patrol cars. The Growth Management Element prescribes response times for emergency services. Consequently, a centrally located fire station, and likely a sheriff's substation, would be needed to provide an urban level of service. This alternative would not modify the facilities required for emergency service providers which would be the same as the proposed project. An existing fire station presently serves the planning area, however, alternative site plans do not acknowledge the existence of this station.

The General Plan standards for parks are based on projected population. The alternative would require 50 percent less neighborhood and community park lands than the proposed project. Figure 6.3-1 has excluded the community park and replaced it with hillside park/recreation in the rugged hillside along the west and northwest boundary adjacent to Dougherty Valley. Although this area can be utilized for hiking and equestrian activities, nonetheless, it does not accommodate the need for sports facilities. Lack of a community park would significantly impact existing sports facilities in Danville and San Ramon.

Cultural Resources

Excluding the two sites located on the Wendt Ranch property, only one known historic archeological site exists within the Tassajara planning area. Development is proposed in the location of the cultural resource. This may constitute a potentially significant impact depending upon the outcome of the significance evaluation prepared for this site.

Jobs/Population/Housing

The 50 percent alternative would result in a future Tassajara Valley containing about 2,967 households and providing about 342 jobs. The job estimate assumes a reduction in local population-serving establishments and workers directly proportional to the reduction of households. Such proportional reductions of resident workers and on-site jobs would have only a very small effect on the Tassajara Valley future employed worker-per-job ratio and no significant effect on the Tri-Valley regional or Contra Costa countywide ratios of resident labor force to local employment in the year 2010.

Higher priced housing on large lots would actually increase in this alternative, while sharp reductions in moderate priced housing would occur—well beyond the 50 percent overall reduction in project density (see Table 6.0-2). Given an essentially irreducible "backbone" infrastructure cost to extend utility trunklines and improve major roadways, considerations of financial feasibility tend to preserve the higher priced units when projects are reduced in scale.

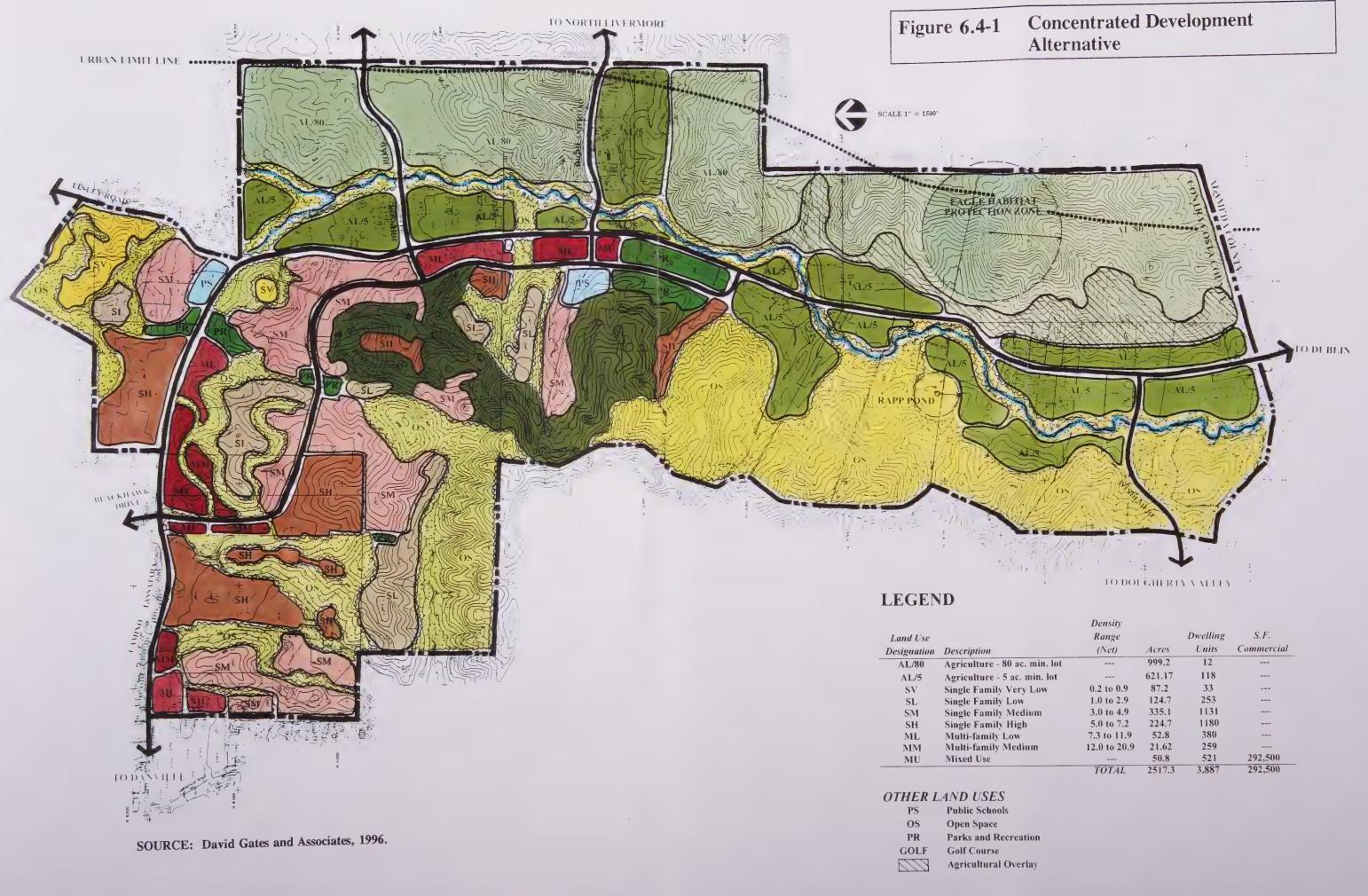
The demand for housing affordable to lower-income households would decline somewhat with the reduction of on-site employment and the greater preponderance of upper-income families. Since there are no housing units affordable to lower-income households in the proposed project plan, the lack of such units in this alternative would not result in a reduction in supply.

6.4 CONCENTRATED DEVELOPMENT ALTERNATIVE

Figure 6.4-1 presents a land use map for the Concentrated Development Alternative. It is intended to achieve essentially all of the project sponsor's objectives as outlined in Chapter 3 of this document with the exception that it contains 2,050 fewer dwelling units than the proposed project (a 35 percent reduction). The amount of mixed-use land in the village centers is reduced from 68 acres in the proposed project to 50.8 acres (25 percent reduction in acreage). The amount of commercial space and residential units in the village centers would be reduced proportionately.

In this alternative no urban development would be allowed east of Camino Tassajara or south of the proposed sports park. With regard to housing, the proposed project includes 2,097 multiple-family units (35 percent of the total dwelling units in the project). This alternative proposes 1,160 multiple-family units, which represents 30 percent of the dwelling units in this alternative. With regard to land use, the proposed project allocates 1,506 acres to residential and village center uses. The concentrated alternative designates 897 acres for these uses (a reduction of 40 percent).

The sports park consists of two rectangular-shaped areas designated PR and located south of the west terminus of Highland Road and bisected by Country Loop Road (see Figure 6.4-1). The eastern boundary of the sports park fronts 0.4 mile on the west side of Camino Tassajara and represents a 40-acre community park.



The public facilities provided in the concentrated alternative include the 40-acre sports park, along with four neighborhood parks. Additionally, two school sites are shown. One site is located in the northwest corner of the Finley Road/Camino Tassajara intersection, and the other site fronts on Country Loop Road at the west terminus of Highland Road. Another open space use shown in Figure 6.4-1 is a hillside golf course, which would overlook the southern village center.

The internal circulation network in this alternative resembles the proposed project. Specifically, it does not propose any new road connections through the Lawrence Road Specific Plan area to Dougherty Valley. Country Loop Road is retained. Its northern intersection with Camino Tassajara would be directly opposite the east gate entrance to the Blackhawk development, and its southern intersection with Camino Tassajara would be at the southern limit of urban development in the project. Traffic generated by this alternative could be directed toward the west on Camino Tassajara. The reduction in the number of units in this alternative does reduce impacts and some significant impacts are avoided. However, significant traffic impacts are associated with this alternative, including the Camino Tassajara/Crow Canyon Road intersection. Some key characteristics of the Concentrated Development Alternative are described below.

- Open Space. Approximately 43.5 percent of the planning area is designated OS, PR and Golf. Additionally, 22 percent is designated AL/80 and 14 percent is designated AL/5. When combined, these open space and rural land uses total 79.5 percent of the planning area. Urban uses total 20.5 percent of the planning area.
- <u>Buffers</u>. The alternative provides buffers between agricultural uses to the east of the planning area from proposed urban uses. Additionally, it provides a buffer between residential uses in the planning area and development that is planned further to the south in Alameda County.
- Agriculture. In the southern portion of the planning area, lands would retain agricultural zoning. On the valley floor the plan would allow creation of an estimated 118 ranchettes on 5-acre parcels. In the hillside area to the east of the valley floor, an agricultural overlay is shown. This suggests that an agriculture use, such as vineyards, would be encouraged. (To be successful, any commercial agricultural use would require an adequate supply of irrigation water.)
- <u>Dougherty Valley</u>. In the Hidden Valley area, located in the northeast corner of Dougherty Valley, the Board of Supervisors designated an 800-acre area as permanent Open Space (OS) and amended the urban limit line to take this area out of the urban area. Additionally, a one-quarter-mile-wide, east-west wildlife corridor was established by the Board that is midway between the Hidden Valley area and the segment of Windemere Parkway shown in Figure 6.4-1. The Concentrated Development Alternative recognizes the significance of these features by proposing open space uses, including OS and PR (golf course) along the Dougherty Valley/TVPOA boundary.

Ranchettes. The legend on the Concentrated Development Alternative site plan estimates the plan could accommodate 12 ranchettes on 80+-acre parcels and 118 ranchettes on 5+-acre parcels. The rural residents would rely on well water and leech fields for domestic water and disposal of wastewater, respectively, due to the distance from the main water and sewer lines.

Land Use and Planning Policy

The concentrated development alternative would concentrate development on the flatter portions of the site, reserving the steeper slopes for open space. This would be an improvement over the proposed project in that a greater amount of open space would be preserved and there would be less need for cut and fill grading of the overall site. This alternative would provide for a more compact infrastructure system and more efficient service delivery system.

Like the two reduced alternatives previously discussed, this plan also contains development to the west and south of Camino Tassajara, retaining lands east of the roadway in agricultural use. This plan also limits the extent of development southward to the Camino Tassajara/Highland Road intersection. The concentrated alternative is much more compact and could lead to more of a sense of community than the proposed plan where development includes some isolated pockets of development. By limiting more intensive development to the west side of the valley, the plan will likely seem less urban than the proposed plan.

The location of a public school immediately adjacent to Camino Tassajara at Finley Road is questionable given the traffic conditions at this location and the need for students on the south and west side of Camino Tassajara to cross the roadway to reach the school.

The Highland Road mixed-use area has been reduced in size. However, it is questionable whether a village center should be retained at this location, given that almost all of the residential development is to the north of the site. This could increase the amount of interior vehicular trips. An alternative location would be across from the Johnston Road intersection where higher density development is proposed.

Geology/Seismicity/Soils

Geology

The geologic factors which influence the difficulty of hillside development include engineering properties of the bedrock unit and severity of landslide hazards. In the Tassajara planning area, most of the hillsides are within the outcrop belt of the Sycamore Formation (Tps), which consists of weakly consolidated mudstone and siltstone, with interbeds of sandstone, tuff and conglomerate. However, the extreme southern portion of the planning area is in the outcrop belt of the Tassajara Formation (Pta).

This unit is younger and less consolidated than the Sycamore Formation, and is even more prone to slope stability problems. Moreover, the bedrock units that occur in the planning area are folded, faulted, locally sheared and in some areas the bedrock is deeply weathered. Because of these factors, an approach to development which reduces lot yield in the southern portion of the site and which retains more of the hillside area as open space could be considered to be more sensitive to geologic hazards.

In the concentrated alternative, lands east of Camino Tassajara are designated for 5-acre and 80-acre minimum lot size. Large lot development of this type allows the opportunity to carefully site driveways and building sites to avoid the most hazardous areas. The concentration of high-density development and medium-density development in north portion of the site provides the economic capability to fully mitigate geologic hazards.

Seismicity

The seismic setting is unchanged. Earthquake damage potential is comparable to the proposed project.

Grading

No grading plans have been formulated for the Concentrated Alternative. It is anticipated that mass grading would be required for areas designated Single-Family Residential Low Density (SL) through Multiple Family Residential Medium Density (MM) as well as for the golf course. For lands designated Single-Family Residential Very Low Density (SV), AL/80 and AL/5 custom grading of roads, driveways and building sites is anticipated. Based on this analysis, the amount of grading required for the Concentrated Alternative is substantially less than the grading needed to implement the proposed project—probably one or more million cubic yards. This alternative is far superior to the proposed project in terms of grading on the highest ridges on the site. The ridges on the perimeter of the Hidden Valley area of Dougherty Valley are retained as either open space or parks and recreation (i.e., golf course).

Flood Hazards/Drainage/Water Quality

This alternative will significantly reduce the volume of urban runoff exiting the site and entering the channels of Alamo and Tassajara Creeks. Most of the reduction in lot yield is in the southern portion of the project area (Tassajara Creek watershed). Because runoff at the County line is not allowed to exceed existing peak flow, detention basins are still required. However, their size and location could be modified, and if the capacity of the basins drop below 15-acre-feet they would not be considered regional detention basins maintained by the Flood Control District. Instead, a public entity, such as a County Service Area (CSA) or drainage district would be created to provide for perpetual maintenance. Any detention basins required for the project would be required to comply with the design standards of the County Flood Control District; the hydrology study would be required to be based on the County's Hydrology Model; and the locations selected for basins and approach to flood control would be subject to approval by Contra Costa County. Because the primary purpose of the detention basin is to keep peak flows at or below pre-development flows at the County line, the hydrology modeling would need to take into account detention basins higher and lower in the watershed.

Because the amount of development in the Tassajara Creek watershed has been substantially reduced in this alternative, the size of this detention basin will be substantially reduced from that required for the proposed project. It should be recognized that agricultural land uses are planned south of the southern Country Loop Road/Camino Tassajara intersection. Similarly, south of the Finley Road intersection land uses on the east side of Camino Tassajara are exclusively agriculture. This arrangement of land uses near the channel of Tassajara Creek provides the opportunity for a project-specific detention basin(s) to be constructed on-site in lieu of the upstream (off-site) basin on the Foley property, which is contemplated by the proposed project. A potential advantage of an on-site basin is that it would be closer to the County line and therefore a more direct control on flows discharged into Alameda County. It could also be designed to have beneficial effects on water quality in the creek.

Biological Resources

Under this alternative, urban development would be further limited in the southern half of the valley floor along Tassajara Creek, but intensive development would be expanded in the northern portion of the site, originally proposed as a golf course. This would include high-density residential development on both sides of Alamo Creek on the Wendt Ranch and additional low-density development in the northwest portion, directly south of the Wendt Ranch development (Area B). As with the other alternatives, the additional residential development would further interfere with wildlife movement along the Alamo Creek corridor. Intensive multiple-family residential development and the relocated golf course would obstruct wildlife movement across the valley floor in Area L, which was intended to serve as one of the major east-west movement corridors in the proposed project. South of the relocated golf course, residential development density would be limited to a minimum lot size of 5 acres in locations along the valley floor. The low-density development proposed south of the golf course may adversely affect habitat for sensitive wildlife species, depending on the sighting of structures and relationship to movement corridors. A major east-west movement corridor for wildlife is missing from this alternative as well. It is logical to assume that a wildlife corridor would extend from Hidden Valley in Dougherty Valley, through the Rapp pond and creek to the eastern side of the roadway.

While the concentration of development could provide adequate opportunities to mitigate adverse impacts on biological resources through avoidance and enhancement of open space areas, the plan falls short of achieving this goal. Measures recommended to reduce adverse impacts of the project as proposed would generally still apply to this alternative.

Traffic and Circulation

The Concentrated Development Alternative would result in 3,887 housing units that would be concentrated in the northern part of the proposed development plan. The off-site land use would be represented by the year 2010 *General Plan* land use.

⁶ See Figure 4.4-4 for a map showing the location of areas referenced in this analysis.

The on-site transportation system would be a modified version of the internal circulation system detailed in the project description. The Country Loop Road would be the only roadway to serve local traffic. This road would terminate at Camino Tassajara, just south of Highland Road. The on-site circulation would provide reduced accessibility of the proposed development when compared to the project. The off-site transportation system would be represented by the year 2010 Background Road System Network.

The Concentrated Development Alternative would generate approximately 2,940 additional AM and 3,770 additional PM trips during the peak hour compared to the existing conditions. This alternative would create approximately 1,760 fewer AM peak-hour and 2,260 fewer PM peak-hour trips than the project.

Intersection Level of Service

This alternative would result in level of service E or F conditions at four intersections in the AM and seven intersections in the PM peak hour. This alternative would therefore reduce the number of intersections operating at level of service E or F by three in the AM and four in the PM peak hour when compared to the project.

Noise

Noise levels in the Tassajara area would not be substantially different than the noise levels projected under the proposed project. This alternative is substantially superior too the proposed project and similar to the Reduced Density—50 Percent Alternative with respect to the exposure of residential development areas to high noise levels. No residential development is proposed within this alternative south of the Highland Road intersection with Camino Tassajara Road with the exception of a multifamily low-density development at this intersection. This alternative plan does include a public school site adjacent to Camino Tassajara Road which may require noise mitigation. A school site plan that locates less noise-sensitive uses immediately adjacent to the roadway could largely mitigate this potential impact.

Air Quality

The potential for construction-phase nuisance impacts could occur under this alternative similar to that of the proposed project. Construction-period impacts would be considered potentially significant.

Permanent air quality impacts would be roughly proportional to total daily vehicle trip generation. This alternative would generate approximately 66 percent of the daily trips of the proposed project, and air quality impacts would similarly decrease. This alternative would not have a significant local air quality impact. Regional impacts would exceed the thresholds of significance of the Bay Area Air Quality Management District, so this alternative would have a significant impact on regional air quality.

Visual Quality/Aesthetics

Concentrating the development as shown in Figure 6.4-1 provides many beneficial aspects as compared to the proposed project. Grading of hilltops for residential units would be substantially reduced as discussed in the two previous alternatives. Major existing valleys on either side of Camino Tassajara south of the southern intersection of the Country Loop Road and Camino Tassajara would remain in either open space or 5-acre minimum lots.

More open space is provided adjacent to Camino Tassajara with the removal of single- and multiple-family development along the roadway, south of Highland Road. Views to the valley hillsides would be enhanced with this change. The limitation of residential development east of Camino Tassajara to 5-acre lots starting at the Finley Road intersection would provide a clean and dramatic change in visual character along the roadway. This could reinforce the semi-rural character of the valley south of Finley Road and serve as a distinctive entry to the more urban area to the north and west. Providing an Agricultural Overlay Zone also would enhance the semi-rural character of the area.

As with the two previous alternatives discussion, the southern entry would better satisfy County General Plan goals by providing a more scenic visual gateway to the County.

The concentrated development plan does provide some negative aspects associated with the realignment of Camino Tassajara in the southern end of the planning area and placement of houses/roadways in the AL/80 lands. The location of the golf course could impinge visually on the general character of the open space. The course would include a prominent hill immediately west of the Highland Road/Camino Tassajara intersection and would be seen in context with the natural open space of the hilltops and hillsides to the south. It would no longer be hidden in the valley as shown on the proposed plan. Fewer views of open space areas would be seen from the west side of Country Loop Road due to the replacement of park/recreation and public school land uses with mixed use and multi-family medium-density residential development at the intersection with Camino Tassajara. With the exception of two short breaks for open space or parks, Country Loop Road would be bordered by residential uses and probably sound walls along its entire length between the northern village center and the Johnston Road intersection with Camino Tassajara.

Public Utilities

Tables 6.4-1, 6.4-2 and 6.4-3 present the potable water demand, dry weather wastewater flow and recycled water demand for the concentrated alternative. As illustrated in Figure 6.4-1, this site plan is similar to the site plan for the 50 percent reduced alternative, thus, the location and capacity of pipelines, storage tanks and pumping stations under this alternative are no different than what was discussed previously for the 50 percent reduced alternative. The tables reflect the changes in demand based upon number of dwelling units and projected population.

TABLE 6.4-1
AVERAGE POTABLE WATER DEMAND FOR CONCENTRATED ALTERNATIVE
USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Type	Dwelling Units ¹	People Per Unit ¹	Interior Water Use Per Person (gpd) ²	Interior Water Use Per Unit (gpd)	Interior Potable Water Use (gpd)	Acres	Irrigable Area (%) ³	Gallous Per Acre Per Day	Irrigable Area That Can Use Recycled Water (%)3	Exterior Potable Water Use (gpd)	Total Potable Water Use (gpd)
sv	Single-Family - Very Low	33	3.04	60	182	6,000	87	30	2,530	0	66,000	72,000
SL	Single-Family - Low	253	2.94	60	176	44,500	125	50	2,530	0	158,100	202,600
SM	Single-Family - Medium	1,131	2.94	60	176	199,100	335	60	2,280	0	458,300	657,400
SH	Single-Family - High	1,180	2.45	60	147	173,500	225	40	2,020	0	181,800	355,300
ML	Multi-Family - Low	380	1.96	60	118	44,800	53	50	2,020	0	53,500	98,300
MM	Multi-Family - Medium	259	1.75	60	105	27,200	22	40	2,020	80	3,600	30,800
MU	Mixed Use	521	1.54	60	92	47,900	51	25	2,020	90	2,600	50,500
AL/5	Agricultural/5-acre lots	118	3.04	60	182	21,500	621	107	2,530	0	157,100	178,600
PS	Public/Semi-Public4	2		***	400	800	20 ⁷	37	2,400	70	5,300	6,100
PR	Parks and Recreation ⁵	7			200	1,400	401	55	2,530	100	0	1,400
OS & AL/80	Open Space and AL/808		0	40	200	0	2,251	5	2,530	100	0	0
	TOTAL	3,875 ⁶				566,700	4,491				1,086,300	1,653,000

Values provided by TVPOA.

Source: Carollo, 1994, and Mills Associates. Adjusted to reflect densities for the Concentrated Development Alternative.

² gpd = gallons per day.

Value provided by TVPOA by land use type. May vary by individual site.

Based on 2 subareas of public/semi-public development (2 connections) at 400 gpd each.

Based on 6 parks and 1 golf course (7 connections) at 200 gpd each.

Dwelling units only; does not include PS or PR land uses.

⁷ Estimated by Mills Associates.

Agricultural/80-acre minimum lot size (AL/80) is the existing land use. This analysis assumes water will be supplied by existing private wells.

TABLE 6.4-2
AVERAGE DRY WEATHER WASTEWATER FLOW FOR CONCENTRATED ALTERNATIVE USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Description	Number of People	Base Wastewater Flow Per Person (gpd)	Total Base Wastewater Flow (gpd)	Number of Dwelling Units	Base Inflow and Infiltration Per Dwelling Unit (gpd)	Total Base inflow and infiltration (gpd)	Total Average Dry Weather Flow (gpd) ¹
sv	Single-Family - Very Low	100	60	6,000	33	60	2,000	8,000
SL	Single-Family - Low	744	60	44,600	253	60	15,200	59,800
SM	Single-Family - Medium	3,325	60	199,500	1,131	60	67,900	267,400
SH	Single-Family - High	2,891	60	173,500	1,180	60	70,800	244,300
ML	Multi-Family - Low	745	60	44,700	380	60	22,800	67,500
MM	Multi-Family - Medium	453	60	27,200	259	60	20,700	47,900
MU	Mixed Use	802	60	48,100	521	60	31,300	79,400
AL/5	Agricultural/5-acre lots	359	60	21,500	118	60	7,100	28,600
PS	Public/Semi-Public ²	••		800	2	60	100	900
PR	Parks and Recreation ³	-	••	1,400	7	60	400	1,800
OS & AL/80	Open Space and AL/80 ⁵			0	0	60	0	0
Total		9,419		567,300	5,950 ⁴		238,300	805,600

Average dry weather flow equals base wastewater flow plus base inflow and infiltration. gpd = gallons per day.

Source: Carollo, 1994, and Mills Associates. Adjusted to reflect densities for the Concentrated Development Alternative.

Based on 2 subareas of public/semi-public development (2 connections) at 400 gpd each.

Based on 6 parks and 1 golf course (7 connections) at 200 gpd each.

Dwelling units only; does not include PS or PR land uses.

Agricultural/80-acre minimum lot size (AL/80) is the existing land use. This analysis assumes septic tanks will be used for wastewater treatment and disposal.

TABLE 6.4-3
AVERAGE RECYCLED WATER IRRIGATION REQUIREMENTS
FOR CONCENTRATED ALTERNATIVE
USING DSRSD PLANNING CRITERIA

Land Use Code	Land Use Description	Acres	Total Irrigation Water Use (gpd)	Fraction Met With Recycled Water (%)	Recycled Water Irrigation ¹ (gpd)
SV	Single-Family - Very Low	87	66,000	0	0
SL	Single-Family - Low	125	158,100	0	0
SM	Single-Family - Medium	335	458,300	0	0
SH	Single-Family - High	225	181,800	0	0
ML	Multi-Family - Low	53	53,500	0	0
MM	Multi-Family - Medium	22	17,800	80	14,200
MU	Mixed Use	51	25,800	90	23,200
AL/5	Agricultural/5-acre lots	621	157,100	0	157,100
PS	Public/Semi-Public	20	17,800	70	12,400
PR	Parks and Recreation	401	558,000	100	558,000
OS & AL/80	Open Space and AL/80	2,251	284,800	100	284,100
Total		4,491	1,979,000	53	1,049,700

¹ Estimated average daily use.

Source: Carollo, 1994, and Mills Associates. Adjusted to reflect densities for the Concentrated Development Alternative.

Assuming the northwest corner of the project site is served by EBMUD and CCCSD, and DSRSD serves the remainder, the Concentrated Development Alternative would generate the following demand: potable water - 1.40 mgd, recycled water - 1.04 mgd, and wastewater - 0.66 mgd.

² Estimated by Mills Associates.

Public Services

The alternative site plan indicates two school sites, one located at the northwest corner of the Finley Road/Camino Tassajara intersection. This could be considered a poor location from a traffic safety standpoint and it would be better located on the south and westerly side of Camino Tassajara where the major portion of development would occur. This alternative could accommodate all of the elementary school students generated by the project, as well as students from the Wendt Ranch development, providing both schools are designated for elementary use. Middle and high school students would have to attend facilities within the district, thereby potentially creating overcrowded conditions at existing schools.

Although density is decreased, an urban level of service would be required. Nine patrol officers and one-and-one-half patrol cars would be needed to serve the population generated by this alternative. Consequently, a fire station and sheriff's substation would be required within the planning area. This alternative site plan acknowledges the existing fire station. It is assumed that the station would be upgraded to accommodate an urban level of service. This plan retains the community park south and west of Highland Road and several of the neighborhood parks, similar to what is included for the proposed project. Inclusion of on-site park/recreational facilities would not significantly impact existing facilities in Danville or San Ramon.

Cultural Resources

Potential impacts on the cultural resources site located in the Finley Road area could be avoided with the development of a school site rather than with housing placed throughout the parcel.

Jobs/Population/Housing

The concentrated development alternative would involve a 35 percent decrease in the total number of dwelling units, compared with the proposed project alternative, and would concentrate residential development in the flatter portions of the site. The 3,887 dwelling units would accommodate approximately 9,418 persons, with 6,239 employed residents. With a 50 percent decrease in the amount of local commercial space, the ratio of employed residents to local jobs would increase for the Tassajara Valley project area. However, the impact on the Tri-Valley and countywide ratios is not expected to be significant.

The distribution of dwelling units by land use category, as shown in Table 6.0-2, is more extreme than the distribution in the Reduced Density—25 Percent Alternative. The number of dwellings in the highest density categories would decline by more than 50 percent, out of proportion to the overall decline of 35 percent. By contrast, the number of units of the lowest density housing would actually increase compared with the proposed project. Most of this increase would be in the agricultural land use category with a 5-acre minimum lot size.

6.5 COMPACT ALTERNATIVE

Principal Characteristics

Figure 6.5-1 presents the land use map for the Compact Alternative. The legend for this figure provides an acreage and dwelling unit summary for each residential land use category that is within the urban area. The estimated lot yield is 2,000 dwelling units, including the Wendt Ranch project. This is approximately 34 percent of the lot yield of the proposed project, so the Compact Alternative does not accomplish the objectives of the project proponent. In this alternative, residential land use designations are proposed chiefly on the south side of Camino Tassajara, opposite the existing Blackhawk and Shadow Creek developments. A small area designated Single-Family High Density residential is located on the north side of Camino Tassajara, adjacent to an elementary school that is currently under construction. Thus, this proposed development area is adjacent to existing urban land uses. The Compact Alternative provides for agricultural and open space land uses in the remainder of the Tassajara planning area. These lands, which are outside of the urban area, are estimated to have a potential for 80 new ranchettes on parcels of five acres or larger.

As identified in Chapter 4.5, the primary environmental constraint of development in the planning area is the ability of the local road network to efficiently convey traffic to I-680 and I-580. Because providing linkage to Dougherty Valley is not consistent with approved plans of the Town of Danville and Contra Costa County, the Compact Alternative considers distributing traffic on the existing road network to be the only realistic scenario for the foreseeable future. Given this constraint, the traffic modeling done to date indicates that another 2,100± dwelling units on the project site and environs is a practical limit for predominantly single-family development and would require limited road improvements at the Camino Tassajara/Crow Canyon intersection and still maintain an acceptable level of service during the peak hour.

It is important to note that independent of the project, Shapell Industries has received approval of a general plan amendment and rezoning on the Wendt Ranch property that would accommodate 323 dwelling units, and Kaufman and Broad has requested approval of a general plan amendment and rezoning that would allow construction of approximately 210 dwelling units on a 44.4-acre site located in the southeast corner of the Lawrence Road/Camino Tassajara intersection (Tassajara Meadows project). Together, the Wendt Ranch and Tassajara Meadows projects total approximately 533 dwelling units. When units from the Tassajara Meadows project are combined with the units from the Compact Alternative (excluding the 80 units designated for agricultural land outside the development area), the overall yield would be approximately 2,200 dwelling units. This represents essentially all the development that the existing road network can accommodate without triggering substantial traffic impacts that would result in major roadway improvements to mitigate impacts at the Camino Tassajara/Crow Canyon Road intersection or without putting a greater emphasis of multi-family development which generates fewer trips. For the Compact Alternative, it is assumed that each of the land development projects would equitably participate in funding those road improvements that are unavoidable for this land use scenario.

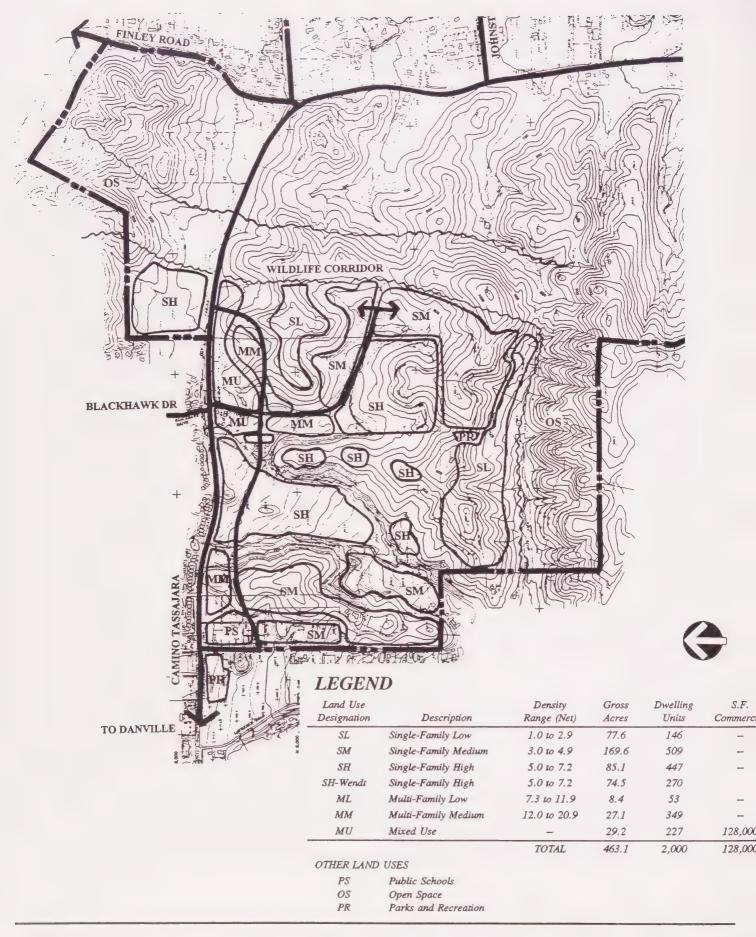


Figure 6.5-1 Compact Alternative

Another consideration that is critical in developing the Compact Alternative is to limit urban land use designations to the western portion of the Tassajara planning area. This would place the units on the south side of Camino Tassajara, immediately east, southeast, and west of Shapell's Wendt Ranch project. The only lands with urban designations on the north side of Camino Tassajara are adjacent to the existing urban area and are gently sloping. The basis for this land use concept is as follows: The Wendt Ranch subdivision, as well as the Tassajara Meadows subdivision, may be served by EBMUD (domestic water) and CCCSD (wastewater). By locating the units contiguous to the Shapell property, utility agencies could efficiently serve all the development projects. The need to pursue urban service extensions from DSRSD would be avoided. The opportunity for a regional detention basin on the Wendt property would remain in place, and a small, project-specific basin(s) would be needed to mitigate runoff from urban areas in other watersheds.

With regard to the Tassajara Creek watershed, the Compact Alternative identifies a wildlife corridor. Additionally, the Rapp pond, along with the Eagle Habitat Protection Zone, should be retained as significant environmental features. Any development within the Tassajara Creek watershed would occur under agricultural zoning districts. The Compact Alternative calls for AL/5 designation for the valley floor; OS on the upland area west of the valley floor and AL/80 on the upland area east of the valley floor. The AL/5 designation in effect recommends retaining the General Plan "agricultural lands" (AL) designation, but would allow General Agriculture (A-2) zoning (minimum standard parcel size 5 acres) for this area. The AL/80 designation is recommended to control hillside ranchette development. These lands would continue to be designated agricultural lands by the General Plan, but the implementing zoning district would be A-80 (minimum standard parcel size 80 acres). The Open Space (OS) designation is recommended as a method to protect the west side of the Tassajara Valley from ranchette development. This portion of the planning area is adjacent to the Hidden Valley area of Dougherty Valley, which was taken out of the urban area by the Board of Supervisors in December 1996. That modification to the urban limit line was made when the Board approved the Dougherty Valley General Plan Amendment (GPA 96-0001), Dougherty Valley Specific Plan Amendment (SP 96-001) and related entitlements. The Hidden Valley area was determined to have a rather unique set of environmental features and habitat values that required protection. The Hidden Valley area is designated OS by the Dougherty Valley General Plan Amendment and Specific Plan. The Compact Alternative presented herein continues the OS designation into the adjacent lands within the project. Key features of the Compact Alternative are described below.

Open Space. This alternative provides residential land use designations (SL, SM and SH) and mixed use (MU) for approximately 463 acres of the Tassajara project. Additionally, it shows a 10±-acre elementary school site (PS) in the northwest corner of the planning area. The remainder of the Tassajara project would carry a *General Plan* designation of Agricultural Lands (AL) or Open Space (OS). The Compact Alternative would retain approximately 90 percent of the planning area in open forms of land use.

- <u>Village Centers</u>. A mixed use area of 29.2 gross acres is shown in Figure 6.5-1. This area is bounded on the west by a collector street that would intersect Camino Tassajara opposite its intersection with Blackhawk Drive. The mixed use area fronts for 2,000 feet on the south side of Camino Tassajara. The land uses and design of the village center on this site would need to take into account land uses that would be directly across Camino Tassajara from the village center. These land uses include existing residences in Blackhawk, an elementary school (under construction), and a neighborhood in the Tassajara project that is proposed for a Single-Family Residential High Density (SH) designation. It is envisioned that the village center would include 128,000 square feet of commercial uses. Integrated with the commercial area uses would be approximately 226 dwelling units. The village center would comply with Tassajara Design Guidelines. The location of the village center in the outer edge of the urban area could limit the commercial uses that would be viable. Potential uses include medical and dental offices, veterinarian, convenience shopping/gas station, and religious facilities.
- <u>Community Facilities</u>. A school site consisting of seven acres is shown in the extreme northwest corner of the planning area (see Figure 6.5-1, area labeled PS). The adjacent area to the west is within Kaufman and Broad's Tassajara Meadows project. The Kaufman and Broad plan, which has not yet been approved by Contra Costa County, shows a neighborhood park in the northeast corner of that site (PR). These community facilities would be contiguous and provide flexibility in siting of the public school and associated neighborhood park.

The site plan for the Compact Alternative shows a small pocket park (labeled PR) just south of the southeast corner of the Wendt Ranch. This area is approximately one acre. The size of this park could be adjusted to ensure that the Tassajara project complies with the *General Plan* provisions pertaining to neighborhood parks. Neighborhood parks are located within the Wendt Ranch project, totaling 4.3 acres. The plan also includes a 14-acre creek corridor and approximately 66 acres of open space (Wendt Ranch EIR, 1996).

The Compact Alternative does not provide land for either a community park or for a gathering point for the community. The opportunity exists for incorporating community-serving uses into the village center, such as an auditorium, childcare facility, sheriff's substation, or swim club/health club.

If the open space in the project is not dedicated to a public agency, the homeowners association or a special district would be charged with the responsibility to maintain the private open space, landscaping, and project-specific stormwater detention facilities.

• <u>Development Concept.</u> The Compact Alternative provides for approximately 2,000 dwelling units on lands designated for urban uses in the west portion of the planning area (i.e., chiefly within the Alamo Creek watershed) and 80 ranchettes in the Tassajara Creek watershed. As Figure 6.5-1 indicates, the land uses selected for this alternative represent an approach to development that is consistent with the approved Wendt Ranch project. That approach shows development on gently sloping land; provides for development on the crest of minor ridges; and retains moderately- to steeply-sloping ground as private open space. It is to be ungraded, except where landslides require remediation.

• Wildlife Corridor. The Compact Alternative shows a wildlife corridor just east of the lands designated for urban land uses. Ranchettes would not be allowed to conflict with wildlife use of the corridor. The corridor provides linkage between the Hidden Valley open space areas in Dougherty Valley and the open space areas to the north and east of the Tassajara planning area. Without such movement corridors for wildlife, the habitat value of open space areas in the planning area and Dougherty Valley would be significantly diminished. Use of AL/5 lands must give consideration to the compatibility of any planned improvement with the wildlife use of these corridors.

Land Use and Planning Policy

This alternative eliminates some of the land use compatibility impacts identified for the proposed project by concentrating development in the northwestern portion of the planning area, although impacts identified for the project relative to Blackhawk Ranch would remain the same. The footprint of the urban area in Figure 6.5-1 is very similar to the proposed project, with the exception of the golf course; the Compact Alternative does not include a golf course. The golf course site is designated Single-Family Residential Low Density (SL). The village center in the Compact Alternative is identical to the Western Village Center in the proposed project. The densities shown in Figure 6.5-1 are higher than what has been approved in Blackhawk and higher than those achieved in the Wendt Ranch project. Design controls should be established for the agricultural designations to avoid siting structures on visually prominent hillsides and ridgelines and to avoid steeply cut slopes. Densities should be reduced where the Tassajara project adjoins existing/future development of lower densities to provide compatibility and continuity, such as along the property boundaries with Wendt Ranch.

Geology/Seismicity/Soils

The areas planned for residential land use designations are in the outcrop belt of the Sycamore Formation. The swale areas are pock-marked with landslide scars, but most of the development areas are planned for ridgecrests and the floor of upland valleys. Corrective grading of slides that adjoin development areas would be required, although major terrain features would be retained. The grading concept is to lower and flatten minor ridges to accommodate roads and residential uses, similar to the approach to development illustrated by the proposed project. This would generate some fill for use to pad up valley floor areas. The intervening open space that can be seen in Figure 6.5-1 would be retained as ungraded open space, except where corrective grading was necessary to stabilize the slope. In such cases, the slopes would be contour graded to mimic a natural terrain feature.

Flood Hazards/Drainage/Water Quality

In the Compact Alternative, residential and mixed use designations in the Tassajara Creek watershed are minimal. Consequently, one or two project-specific detention basins would be needed in this watershed.

In the Alamo Creek watershed, the development of more than 1,500 dwelling units⁷ would require construction of one or more detention basins. Because of the limited scale of development, one regional detention basin of 15-acre-feet capacity would probably not be required. Nevertheless, it would be desirable to have one basin, designed and constructed to Flood Control District standards and with a perpetual source of funding and maintained by a public agency (not a homeowners association). The ideal site for this detention basin would be in the southwest corner of the Wendt Ranch, at the confluence of the East and West Forks. (This basin site is identified in Figure 4.3-3.)

A less efficient system would be the construction of stand-alone detention basins in each development project. For the development area east of Wendt Ranch, the ideal site is in the northwest property corner, adjacent to Camino Tassajara (within or adjacent to the western portion of the mixed use area). Another basin may be needed on the channel that is just south of the lands designated for residential uses. For the property west of Wendt Ranch, the potential detention basin site would be in the southeast property corner. In the case of project-specific basins, a drainage district or county service area, or equivalent, should be established to perform routine maintenance.

Biological Resources

This alternative would substantially limit development in the project area, and consequently serve to minimize potential adverse impacts on biological resources. Intensive development would generally be limited to the Wendt Ranch site and adjacent watershed lands to the east and west. Within the Tassajara Creek watershed, almost no residential land use designations are proposed. Instead, the valley floor areas would be allowed to fragment into parcels as small as five acres, similar to the existing Bruce Drive neighborhood (AL/5). Lands in the western hills of the Tassajara Creek watershed would be designated Open Space (OS) and the eastern hills would be designated Agricultural Lands (AL/80). Broad wildlife corridors with a width of approximately one-quarter mile would still be required at key locations to provide connectivity across the valley floors. The identified corridors could be achieved either through dedication as open space or by establishing easements which restrict nonagricultural development (i.e., residential, commercial, golf course, etc.) on portions of the 5-acre parcels within the corridors. Appropriate measures would still be required to prevent loss of the California red-legged frog and western pond turtle, and to preserve the East Branch of Alamo Creek as a wildlife movement corridor.

The Compact Alternative fails to provide a wildlife corridor on the East Fork channel. A corridor that is at least 250 feet wide is needed on this channel. Where this channel crosses under Camino Tassajara, undercrossing improvements should be made to provide opportunities for wildlife movement in the culvert.

This dwelling unit count includes the Wendt Ranch and Tassajara Meadows projects, along with the 400 dwelling units proposed in the Alamo Creek watershed portion of the project.

Traffic and Circulation

Because of the limited lot yield, this alternative comes closest to avoiding unmitigable traffic impacts without placing a greater emphasis on multiple-family housing which would generate fewer trips. The Compact Alternative (excluding the 80 units designated for agricultural land outside the development area), in combination with Shapell's Wendt Ranch⁸ project and the Kaufman and Broad Tassajara Meadows project, is expected to yield approximately 2,100 dwelling units. It is anticipated that ranchettes would generate peak hour traffic on the segment of Camino Tassajara that is south of the planning area (in Alameda County) or onto Windemere Parkway. Hence, the units generating traffic oriented toward the Crow Canyon Road/Camino Tassajara intersection would be less than the total lot yield of the planning area. However, some improvement would be necessary at this intersection, such as a free southbound right-turn lane, to accommodate development in this alternative. Assuming traffic generation (i.e., peak hour trips) is proportional to lot yield, the traffic generated by approximately 2,100 dwelling units is substantially less than the peak hour traffic which is forecast for the proposed project in Section 4.5. Project trip generation is anticipated to be 1,560 trips in the AM and 2,020 trips in the PM. The number of intersections remaining at level of service E or F is three in the AM and seven in the PM, as identified in Section 4.5. Where the intersection improvements are required, the project proponents would be required to pay their fair share, based upon the traffic contributed to that intersection.

With regard to internal circulation, the site plan for the Compact Alternative is similar to the proposed project. Two major collector roads are shown: one paralleling Camino Tassajara and the other intersecting at Camino Tassajara across from Blackhawk Drive. The roadway paralleling Camino Tassajara would tie in with the collector street shown on the approved Wendt Ranch development plan. This road connection would allow residents of the planning area to access the elementary school and village center without the need to travel on Camino Tassajara. The Public Works Department will review tentative maps to ensure that long cul-de-sac streets are avoided. Instead, circulation loops will be required and there are likely to be four (or five) new Camino Tassajara intersections distributed along the 1.25-mile-long urban portion of the planning area.

This alternative is a concept and does not identify bus stops or a carpool area. Additionally, there is no indication as to how a subdivision should be designed to allow residents to efficiently move from their dwellings to bus stops. Ideally, most residents (80 percent) should be within 0.25 mile of a bus stop.

Noise

The Compact Alternative would significantly reduce the transportation noise associated with the project. Nevertheless, within the project area sound barrier walls or berms would be required along Camino Tassajara and an interior parallel roadway wherever sensitive receptors are located adjacent to the roadway.

⁸ Land uses shown for the Wendt Ranch property are those approved by the Board of Supervisors in December 1996.

Air Quality

This alternative would have the potential for construction-phase nuisance impacts very similar to the proposed project. The lands proposed for residential use are directly across Camino Tassajara from the Blackhawk and Shadow Creek developments and east of the elementary school site that was dedicated to the school district by the developer of Blackhawk Ranch. After development of the first project in the Tassajara planning area, residents of the project would be impacted by dust as adjacent land is developed. Construction impacts would be considered potentially significant.

Permanent air quality impacts would be roughly proportional to the total daily vehicular trip generation. This alternative generates approximately 8 percent of the daily trips associated with the proposed project and air quality effects would be similarly reduced. This alternative would not have a significant local air quality impact, but it would exceed the regional thresholds of significance of the Bay Area Air Quality Management District. Consequently, this alternative would have a significant effect on regional air quality.

Visual Quality/Aesthetics

The Compact Alternative calls for designating some ridgecrests Single-Family Residential Low Density (SL) and Single-Family Residential Medium Density (SM). The site plan for this alternative suggests that the site would be mass-graded and, in limited areas, ridgecrests may be lowered by 100 feet (or more). It should also be noted that the ridges planned for development are minor ridges, but they are adjacent to the Camino Tassajara right-of-way, which is a designated scenic route. The approach to grading and development appears more aggressive than that which was approved on the Wendt Ranch project. This alternative does not appear to provide visual breaks for travelers on the 1.3-mile-long segment of Camino Tassajara that passes through the urban portion of the project. Thus, many of the mitigations pertaining to road setbacks and retention of natural land forms next to Camino Tassajara identified for the project should be applied to this alternative as well. Although not shown in this conceptual plan, potential visual impacts could occur if continuous rows of houses are permitted along secondary roads, particularly on residential streets that may parallel Camino Tassajara and/or an interior loop road. Mitigation measure 4.8-6 should be implemented to avoid this potential impact. East of the area shown for urban development, the view would be similar to the existing view in the Bruce Drive area: large lot development on the valley floor that is consistent with the requirements of the General Agriculture (A-2) zoning district, and a few isolated ridgecrest estates on the hills north and east of Camino Tassajara that are consistent with the requirements of the Exclusive Agriculture (A-80) zoning district. With this alternative, the toes of slopes-which currently extend almost to the edge of the roadway outside the developable area and give the roadway its rural character-would be retained. Although ranchettes would be permitted beyond the developable area, nonetheless the rural character would remain.

Public Utilities

Assuming the residential area in this alternative would be served by the East Bay Municipal Utility District, the total development would generate a water demand of 1,126,000 gallons per day (gpd) based upon a rate of 563 gpd per household (Wendt Ranch EIR, 1996). Using CCCSD's generation rate of 220 gallons per dwelling unit, the project would produce 440,000 gpd of wastewater. This alternative assumes no recycled water would be used and that the areas designated Agricultural Lands would continue to utilize septic systems. Mitigations to reduce water use and wastewater flows recommended for the project would apply as well to this alternative.

Public Services

The site plan includes a $7\pm$ -acre school site in conjunction with a park site in the proposed Tassajara Meadows development. This analysis assumes the site will be used for an elementary school facility. Under this alternative, the project would generate the following number of students:

Grades	Compact Alternative*
K-5	486
6-8	231
9-12	385

*Includes students from Wendt Ranch.

The single elementary school would be adequate to accommodate students generated by this alternative as well as the Tassajara Meadows project. No provision is made for middle and high school students and the middle schools within the District are currently near or at capacity. The future high school in Dougherty Valley is expected to have some surplus capacity; however, it is not clear that a high school would be developed in time to accommodate students generated by the Tassajara project.

To provide an adequate level of police service to serve the projected population, five additional patrol officers and one-and-one-half patrol cars would be required. Additionally, 930 square feet of building space to house the Sheriff's Department patrol units would be required based upon the facilities standard in the Growth Management Element of the General Plan. It is conceivable that the sheriff's facilities' needs could be accommodated with one large substation serving the project area and Dougherty Valley. Alternatively, a larger sheriff's substation could be provided in the village center that would accommodate patrol units that currently are based at temporary quarters in the Blackhawk Country Club. The Tassajara and Blackhawk fire stations could continue to serve the proposed development. However, to provide an urban level of service, the Tassajara station would require enlarging/upgrading and/or replacement.

This alternative lacks a community park and, in fact, relies on the park sites designated on the Tassajara Meadows and Wendt Ranch properties, as well as the one-acre site shown on the plan, to serve the entire development. Under this alternative, *General Plan* park standards require 15 acres for neighborhood parks and 9 acres for a community park. The two sites designated in the Tassajara Meadows and Wendt Ranch plans total approximately 10.3 acres and would not be adequate to serve this alternative. Either 12.5 additional acres should be designated for parks or the developers would be required to pay in-lieu fees sufficient to accommodate similar facilities off-site, but in the project's vicinity. The lack of community recreational facilities would create an impact on existing facilities in Danville and San Ramon. Although Figure 6.5-1 is conceptual, it does not provide access to the trail that will extend along the ridge separating the Tassajara project from Dougherty Valley.

Cultural Resources

Two sites identified for the project are located on the Wendt Ranch property, thus the issue of impacting these sites with this development alternative is no longer relevant. The third site is located in an area designated Open Space and would not be affected.

Contra Costa County has a standard condition of approval that governs situations where artifacts are discovered during development of a property. That condition of approval is applicable to buildout of this alternative.

Jobs/Population/Housing

The Compact Alternative does provide densities that could be considered for affordable housing, although not as much as the proposed project. The number of affordable houses could increase if assistance programs are provided for first-time buyers in the Single-Family Residential High Density category. Housing demand for low-income workers would continue to be an issue because the proposed project would not add to the local or regional low-income housing supply unless more higher-density, multi-family units are provided. This alternative provides a fair number of units that could be affordable to moderate-middle income ranges, thereby contributing to the middle-cost housing supply in the Tri-Valley.

Some commercial space is provided, but would be limited to small service-oriented establishments and could not be considered an employment center. With a 57 percent decrease in the amount of commercial space from the proposed project and a 65 percent drop in the number of employed residents, the ratio of employed residents to local jobs would decrease for the Tassajara Valley project area.

6.6 TRAFFIC MITIGATION ALTERNATIVE

The lot yield in this alternative is dependent upon the capacity of the Crow Canyon Road/Camino Tassajara intersection. The assumed circulation system for this alternative is the year 2010 road

network, the same as that used in the analysis in Section 4.5. Like the previously discussed Compact Alternative, this scenario limits residential land use to subarea one as shown on Figure 3-10 (Phasing Map). Section 4.5 presented Mitigation Package B outlining various options for improving the Camino Tassajara/Crow Canyon intersection, such as free right-turn movements. Implementation of each mitigation would provide the ability to develop the site up to a maximum of 6,200 dwelling units. These mitigation measures and ramification of implementing the improvements are discussed below. Additionally, Section 4.5 presented Mitigation Package C which identified an east/west connector to Dougherty Valley to help relieve congestion at the Crow Canyon Road/Camino Tassajara intersection. Table 6.6-1 shows the intersection LOS if each of the following mitigation measures are applied to the Crow Canyon Road/Camino Tassajara intersection.

TABLE 6.6-1
COMPARISON OF CONDITIONS AT
CROW CANYON ROAD/CAMINO TASSAJARA WITH MITIGATION

8 ·		Mitigation Measure Applied at Crow	AM	Peak	PM I	Peak
Conc	lition	Canyon/Camino Tassajara Intersection	V/C	LOS	V/C	LOS
1.	Year 2010 - No Project	None.	0.75	C	0.67	В
2.	Year 2010 + 6,200 TVPOA units	None.	0.98	E	0.96	E
3.	Year 2010 + 3,662 TVPOA units (includes 846 units in Subarea 1)	None - Reduced density and Mitigation Package B improvements at nine off-site intersections.	0.89	D	0.78	С
4.	Year 2010 + 5,000 TVPOA units (includes 2,100 units in Subarea 1)	Add an eastbound free right-turn lane and include Mitigation Package B improvement at nine off-site intersections.	0.85 (est.)	D	0.89	D
5.	Year 2010 + 6,200 TVPOA units	Add an eastbound free right-turn lane and a northbound free right-turn lane and include Mitigation Package A improvements at nine off-site intersections.	0.89	D	0.85	D
6.	Year 2010 + 6,200 TVPOA units	No improvements at intersection. Construct a roadway connecting Tassajara Valley and Dougherty Valley and include Mitigation Package C improvements at nine off-site intersections.	0.82	D	0.78	С

Refer to Section 4.5 and Tables 4.5-9 through 4.5-11.

It should be noted that whatever the road improvement standards for this intersection, the capacity must be shared with other land development projects. In addition to this project, the Wendt Ranch project (323 dwelling units) has been approved and the Tassajara Meadows project (210± dwelling units) is scheduled for a hearing in early 1997. Thus, approximately 533 dwelling units are pending and/or approved. It should also be noted that the capacity calculations are based on the 2010 traffic model which includes 11,000 dwelling units in the Dougherty Valley. Assuming Dougherty Valley does not

totally build out, future intersection capacity may be more than what is presently predicted by the model.

No Intersection Changes

According to the traffic analysis, if no changes were made to the intersection of Camino Tassajara/Crow Canvon Road and comprehensive improvements were made at nine off-site intersections, a total of 3,662 dwelling units could be accommodated within the project site without the peak hour level of service dropping below LOS D. Of this total, 846 of the units would be located within subarea one (including the units approved for the Wendt Ranch development and units proposed on the Tassajara Meadows site). The remaining 2,836 dwelling units would be located throughout the valley south of Johnston Road. (It is assumed in the traffic model that residents living south of Johnston Road would travel south on Camino Tassajara to access the freeway, thereby not impacting the critical Camino Tassajara/Crow Canyon intersection.) This could be considered leap frog development in that the 533 dwelling units would be located in the very north/northwestern portion of the planning area and the majority of the development would be located south of Johnston Road, one-half mile away. This would not create a cohesive planned community as envisioned with the proposed project. Intervening properties would remain vacant and existing agricultural zoning would apply, thus raising the question of the future status of these parcels. It can be assumed that if capacity becomes available at the Camino Tassajara/Crow Canyon intersection, development of the intervening land would occur, to the extent allowed without decreasing the level of service at the intersection.

Such a scenario also creates internal conflicts in that an internal street system would not be available to relieve local traffic on Camino Tassajara. Residents living in the northern portion would have to access Camino Tassajara to reach community facilities south of Johnston Road; e.g., schools and parks. This scenario would most likely create separate water/wastewater service areas. EBMUD and Central Contra Costa Sanitary District could serve the northern portion and DSRSD could serve development south of Johnston Road.

More housing could be accommodated in the northern portion of the project, without changing the Camino Tassajara/Crow Canyon Road intersection, by placing a greater emphasis on multi-family housing in Subarea 1. Based on trip generation rates for residential development documented by the Institute of Transportation Engineers, multi-family development (garden apartments, residential condominiums, and townhomes) generate fewer peak hour trips when compared with an equivalent amount of single-family housing. During the AM peak hour, one multiple-family dwelling unit will generate 31 to 40 percent fewer trips than a single-family dwelling unit. During the PM peak hour, one multiple-family dwelling unit will generate 37 to 45 percent fewer trips than a single-family dwelling unit. A development scenario that puts greater emphasis on multiple-family housing not only will mitigate traffic impacts, but will also increase the affordability of the housing without the need for government assistance.

Construction of an Eastbound Free Right-Turn Lane

If an eastbound free right-turn lane were constructed at the Camino Tassajara/Crow Canyon Road intersection, a total of 5,016 dwelling units could be accommodated within the project site without the

peak hour level of service dropping below LOS D. Of this total, 2,100 units could be located within subarea one. The remaining 2,816 dwelling units would be located on lands south of Johnston Road. A cohesive development could be created similar to what is shown in Figure 6.2-1, the Reduced Density—25 Percent Alternative. The analysis provided in Section 6.2 would apply to this scenario as well.

Construction of Eastbound and Northbound Free Right-Turn Lanes

If, in addition to the eastbound free right-turn lane, a northbound free right-turn lane were constructed at the Camino Tassajara/Crow Canyon Road intersection, the full 6,200 dwelling unit project (including Wendt Ranch and Tassajara Meadows) could be accommodated without the peak hour level of service dropping below LOS D. All 3,385 subarea one dwelling units could be accommodated as well. Impacts evaluated throughout Chapter 4.0 for the proposed project would apply to this scenario. No additional analysis is necessary.

Extension of Shadow Creek/Johnston Road into Dougherty Valley

This measure would allow for the full project to be developed. However, it does not eliminate all off-site traffic impacts and conflicts with some adopted policies and plans. The 25 percent reduced alternative site plan, Figure 6.2-1, depicts the alignment. Impacts associated with this mitigation are discussed in Section 4.5 and throughout Section 6.2.

6.7 OFF-SITE ALTERNATIVE

Principal Characteristics

Section 15125(d) of the CEQA Guidelines indicate that the EIR evaluation of alternatives may include alternatives to the location of the project. Section 15126(d)(5)(B)(1) of the CEQA Guidelines further states that, "The key question and first step in analysis [of whether to prepare an analysis of alternative sites] is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need to be considered for inclusion in the EIR. If for a specific location no such change would result, then that specific alternative location would not need to be analyzed in the EIR."

This section includes an identification of an alternative site within the same general market area being considered for the proposed project, and a comparative evaluation of the ability of this alternative to:

1) reduce the environmental impacts associated with development on the proposed General Plan Amendment site; and 2) meet one or more basic objectives of the project. Factors considered included:

<u>Size</u>. The alternative site must be able to accommodate a mix of housing types, along with the proposed ancillary uses. The lot yield must be on the order of 5,627 units.

Market Value. The general market area of the proposed project is the Tri-Valley region.

Ownership. A potential consideration in the identification of a reasonable alternative site would be lands either owned or controlled by the project proponents. In this case, it was found that the proponents do not control sizable acreages outside the General Plan Amendment area.

Based on the preceding considerations, the East Dublin area was selected for analysis. It contains sizable acreages that are planned for development by the East Dublin General Plan Amendment, and it is within the market area of the pending project. Because they do not control these lands, the project proponents' underlying goal of maximizing the development potential of their lands is not satisfied.

Land Use and Planning Policy

Transfer of the Tassajara project to the East Dublin site would allow the Tassajara Valley to retain its agricultural nature and open space. There would be no land use impacts on the Tassajara site, they would be transferred to the East Dublin site. However, the development pressure that fostered the East Dublin plan originally would most likely prompt further development at a new location. Thus, the transfer of Tassajara to Dublin would merely be pushing development into other undeveloped areas. This alternative would have no effect on the changes in the urban limit line.

Geology/Seismicity/Soils

The southern portion of the site, along with the East Dublin area, is in the outcrop belt of the Tassajara formation. This unit is geologically young, clayey, weakly consolidated, and possesses generally poor slope stability characteristics. When compared to the geology and slope stability of the project site, the East Dublin area is perhaps slightly more vulnerable to slope stability problems. Neither area is crossed by active faults, and the anticipated ground shaking intensities are equivalent.

Flood Hazards/Drainage/Water Quality

The existing flooding problems are on the floor of the Livermore-Amador Valley. Because the East Dublin area is near the flooding problem, mitigation measures in the East Dublin area have the potential to be more effective in regulating flows on inadequate reaches of the downstream channel. However, the best approach is one that treats the entire watershed as a single system and locates and designs basins using engineering criteria to obtain the best regional solution to drainage (not project-specific mitigation).

Biological Resources

The lands within the project area possess substantial biologic resource value. Sites to the south, in East Dublin, are likely to possess resource value, as well, but they are nearer the I-580 corridor, and relief

is somewhat less. The project site is separated from major open space areas to the north and northeast by ranchette developments along Finley Road and Bruce Drive. In general, it appears that the project site may be more biologically sensitive than lands in East Dublin.

Traffic and Circulation

The on-site land use would develop in accordance with existing zoning, resulting in approximately 80 additional housing units. The off-site land use would be represented by the year 2010 background land use plus 5,627 additional housing units in East Dublin. The on-site transportation system would be represented by the year 2010 background network plus the internal circulation system of the proposed project.

The off-site project location alternative would generate 4,331 additional AM and 5,548 additional PM trips during the peak hour compared to the existing conditions. This alternative would create 54 additional AM peak-hour trips and 73 additional PM peak-hour trips than the proposed project.

Intersection Level of Service

The off-site project location alternative in East Dublin would cause less traffic impacts at the intersections located north of the project site, but would cause more impacts at the intersections located south of the project site.

Noise

The potential noise issues associated with this alternative site would be similar to the issues studied for the proposed project. A detailed assessment of the noise impacts of this off-site alternative is not possible given the limited description of this alternative. However, it can be assumed that given the proximity of I-580 to the East Dublin planning area, much wider setbacks from the freeway would be required to attain exterior noise levels that meet city noise standards. Noise levels would be more severe than with the proposed project.

Air Quality

This alternative would have the potential for construction-phase nuisance impacts very similar to that of the proposed project. Construction-period impacts would be considered potentially significant.

Permanent air quality impacts would be roughly proportional to total daily vehicle trip generation. This alternative would have a trip generation similar to that of the proposed project, although average trip lengths could be shorter if the site were more centrally located. The air quality impacts of this alternative would depend on the location and which streets were affected by project traffic. Regional impacts would exceed the significance thresholds of the Bay Area Air Quality Management District, so this alternative would have a significant effect on regional air quality.

Visual Quality/Aesthetics

The potential visual quality issues associated with this alternative would be similar to the issues studied for the proposed project; e.g., massive grading, encroachment of development into viewshed and alteration of scenic roadways. A detailed assessment of visual quality impacts for this off-site alternative is not possible given the limited description of the alternative.

Public Utilities

Preliminary concepts for sewer, water, and storm drainage infrastructure were included in the East Dublin Specific Plan (Wallace Roberts & Todd, 1994). The domestic and recycled water distribution system pipelines, storage tanks, and booster pump stations, as well as the sanitary sewers, for the offsite alternative would be incorporated into revisions of the East Dublin development plans for public utility infrastructure. No sewage pump stations would be required. Since the East Dublin site is in Alameda County, the off-site alternative does not have to conform with Contra Costa County planning policies. Since the East Dublin site is contiguous to DSRSD's existing service boundary, extensions of pipelines from DSRSD's existing or proposed water and sewerage facilities would be shorter than for the proposed development. CCCSD would not provide wastewater service to the off-site alternative at the East Dublin site in Alameda County.

Public Services

The service needs of an East Dublin project would be comparable to the proposed project. The East Dublin site would be nearer the East Dublin BART station and the I-580 corridor. Traffic-related improvements and, hence, long-term road maintenance costs, may be incrementally less for a project in East Dublin. The general demand for city services (fire, police, schools) would be the same as with the proposed project.

Cultural Resources

The south flank of Mt. Diablo has yielded relatively few archaeologic sites. Although the cultural resource study of the project site was restricted due to ownership patterns, no extraordinary cultural resource sites were located. The lower reaches of water courses in the East Dublin area may have an incrementally higher sensitivity for cultural resources than the proposed project.

Jobs/Population/Housing

Shifting the proposed development from the proposed site to East Dublin would not change the project's impact on Tri-Valley's numerical jobs/housing ratio, assuming the shift of project location implied an

equivalent increase of future housing and employment growth <u>above that</u> already anticipated for East Dublin in the expected growth scenario for 2010. The projected balance of jobs to housing within the Tassajara Valley and the County would be the same as for the No Project Alternative (see Table 6.0-4).

This does not mean that housing affordability would be unaffected by the shift of project location. Prices for existing housing and recent residential developments in the Dublin area have typically been much lower than for comparable housing products in the Alamo-Blackhawk, Danville or San Ramon areas. If recent trends in the housing market continue to 2010, the obtainable prices for East Dublin homes similar in size and construction to those planned for the proposed project would be less than for units constructed in the Tassajara Valley. The price differential would not be enough to increase the number of units affordable to lower-income households formed by Contra Costa County or Alameda County households. Market forces are expected to continue to support prices for new Tri-Valley dwellings well above the maximum affordable to the low- and very-low-income households of the Alameda and Contra Costa counties. However, lower prices would make more of the developed units affordable to moderate-income households.

The off-site alternative would also bring resident workers closer to the anticipated East Dublin job growth center, and to the Bishop Ranch and Hacienda business parks. The potential for this proximity to alleviate in-commuting and cross-commuting pressures for the Tri-Valley would be determined by the extent to which the pace of future job growth matched growth in the resident labor force, and the degree to which future jobs matched the occupational and income requirements of the off-site alternative's households.

The shift to East Dublin might also increase the potential for on-site development of basic industries and employment, as the alternate area is closer to major Tri-Valley highways and to existing and planned concentrations of commercial and industrial activity. This potential benefit would be limited by the specific infrastructure requirements and transportation system impacts of possible development sites in the East Dublin planning area.

6.8 EVALUATION OF ALTERNATIVES

The following discussion provides a brief comparison by environmental topic of the seven alternatives. Following the discussion, a matrix is included that can be used to compare the proposed project with each of the alternatives for the environmental factors analyzed by the environmental impact report. An empirical ranking has been applied under each topic for each alternative to help define the environmentally superior alternative.

Land Use and Planning Policy

The Reduced Density-25 and -50 Percent Alternatives, and the Concentrated Development and Compact Alternatives mitigate the land use compatibility issues between urban and agricultural lands. Like the proposed project, the 25 percent reduced alternative continues to maintain residential

development adjacent to the mixed-use areas. The other three alternatives provide open space or parkland buffers between the commercial and residential land uses which helps to attenuate noise and nighttime light that is characteristically associated with commercial uses. Densities provided along the western property line in the 50 percent reduced alternative would be more in keeping with the densities of the Lawrence/Lema Road Specific Plan. The other three alternatives (25 percent reduced, concentrated and compact) provide higher density housing and is in keeping with the density approved on the Wendt Ranch property. These latter three alternatives maximize the ratio of agricultural land to urban land.

The 50 percent reduced alternative includes an agricultural overlay zone adjacent to the Single-Family Residential Very Low Density (SV) housing, west of Camino Tassajara. If intensive agriculture is pursued, potential urban/agricultural conflicts could occur related to equipment noise, chemical spraying, litter and trespass.

Only the concentrated alternative maintains the community park located south of Highland Road. The 25 percent reduced alternative provides only small neighborhood park sites; the 50 percent reduced alternative has eliminated the community park facilities, but increased the park/recreational land use in the upland, rugged hillsides adjacent to Dougherty Valley. Although this area will connect with open space lands in Dougherty Valley, nonetheless it does not satisfy the need for community sports/recreational facilities. The Compact Alternative utilizes relatively high densities to achieve a lot yield of 2,000 dwelling units and 128,000 gross floor area of commercial uses on 463 ± gross acres. At such high densities, there is relatively little flexibility to provide special design features to address site planning constraints and there is a shortfall in the amount of parklands that are provided. Implementation of any of these alternatives, excluding the concentrated plan, would create significant impacts on local community parks in Danville and San Ramon.

The land use and planning issues posed by the Off-Site Alternative cannot be judged in detail. However, the alternative site would be nearer to freeway ramps, so some issues could be less severe.

Geology/Seismicity/Soils

The Reduced Density—25 and —50 Percent Alternatives reduce hillside grading and avoid urban uses in the most potentially hazardous areas of the site. However, the Concentrated Development Alternative is more efficient in limiting the footprint of development, which allows the volume of earthwork to be reduced and provides the economic capability to fully mitigate potential geologic hazards. The Compact Alternative carries out this same general approach to development, but in a much smaller area. The geology of the Off-Site Alternative is unlikely to provide any advantages over the proposed project.

Flood Hazards/Drainage/Water Quality

All land development options for the planning area have the responsibility to mitigate drainage impacts at the County line. The proposed project also mitigates impacts in the existing Finley Road neighborhood and Lawrence Road area. In each case, the reach of channel immediately downstream

from the detention basin is inadequate or marginally adequate to contain peak flows from the 100-year storm. The flows exiting the detention basin will benefit these downstream, flood-prone properties. It should also be recognized that small, project-specific basins are less desirable from the standpoint of assuring long-term maintenance and efficient use of land. They would also be more expensive to maintain than a regional basin. Based on all of the preceding considerations, the proposed project and the Reduced Density—25 Percent Alternatives are considered the preferred means of controlling flood flows. The Reduced Density—50 Percent, Concentrated Development and Compact Alternatives are scaled-back projects which are more likely to be designed for project-specific detention basins. The flood control issues posed by the Off-Site Alternative are not known in detail. However, the site would be nearer to the flood-prone areas, which are on the floor of the Amador Valley. Moreover, the project and the flood-prone area would be in the same county. This situation simplifies the task of coordinating flood control planning for the watersheds affected by the project.

Biological Resources

A primary consideration in assuring the success of a project alternative include: 1) the protection of habitat, 2) sensitivity of the plan to special-status plants and animals, and 3) provision of corridors for movement of wildlife. Regarding the protection of habitat, the Concentrated Development Alternative substantially reduces the footprint of development in the planning area and would be superior to the proposed project, as well as the Reduced Density—25 and 50 Percent Alternatives. Regarding sensitivity of the plan to special-status plants and animals, each of the plans proposes retaining the channels of Alamo Creek, Tassajara Creek, the Rapp pond and the eagle nest. As the density is reduced, the intensity of uses adjacent to the Rapp pond are reduced. Regarding provision of corridors for movement of wildlife, the habitat value of land-locked open space areas is limited. In Chapter 4.4 considerable attention is given to the width of wildlife corridors. A 100- or 200-foot-wide corridor has value for wildlife, but some wildlife species or individual specie will not use a narrow corridor or be unable to identify a narrow corridor. The ideal wildlife corridor is at least one-quarter-mile wide and it provides alternatives for crossing a major road. Chapter 4.4 points out the need for both east-west and north-south corridors and the importance of considering the location of wildlife corridors in Dougherty Valley, as well as the location of key habitat areas within and east of the planning area.

Review of the alternatives by the environmental impact report biologist has found them all flawed. The most promising alternative from the standpoint of wildlife corridors is the Compact Alternative, and even this plan calls for residential uses adjacent to the channels of the West and East Forks of Alamo Creek (see Figure 4.3-2 for location of these channels). The creek corridors should be 250 feet wide (minimum) along the West and East Forks.

Traffic and Circulation

The alternatives approach the road capacity issues in two ways:

- 1) Reduce generation of peak hour traffic by considering alternatives that yield fewer units. The alternatives presented herein provide a wide range in lot yields from a low of 80 additional units for the No Project Alternative to a high of 4,485 units for the Reduced Density—25 Percent Alternative, and
- Provide circulation options that allow for traffic to be directed into Dougherty Valley, which would allow traffic generated by the planning area to have more direct access to Bollinger Canyon Road and to Dublin/Pleasanton on the segment of Dougherty Road that links I-580 with Dougherty Valley. It would also provide more direct access to the planned Dougherty Valley village center and the high school in Dougherty Valley. Without such a connection, the traffic generated by planning area traffic is oriented to the Crow Canyon Road/Camino Tassajara intersection. From that point, traffic can travel south on Crow Canyon Road, west on Sycamore Valley Road, or north on Blackhawk Drive.

From the standpoint of traffic flow, the best alternatives are those that contain reduced density and the Dougherty Valley connection, or that reduce the scale of the project. In this sense, the Compact and Reduced Density—50 Percent Alternatives are superior to the Reduced Density—25 Percent and Concentrated Development Alternatives. The Compact Alternative assumes that Mitigation Package B improvements are implemented at the Camino Tassajara/Crow Canyon Road intersection. Those improvements would allow the intersection to accommodate the peak-hour traffic associated with 2,100 new dwelling units. However, the No Project Alternative avoids the traffic impacts inherent with a major development in the planning area.

Noise

Chapter 4.6 identifies two types of noise: construction-related noise and noise associated with the vehicle trips generated by the project. Construction noise can be considered a short-term problem, but buildout of a large project could occur over a period of many years. Noise is generated throughout the land development process, usually commencing with noise associated with earthmoving equipment and ending with constructing the buildings. Traditionally, this type of noise is a week-day, day-time noise. Furthermore, there are no long-term stationary sources of construction noise. The alternatives all reduce the size of the proposed project, which would reduce the duration of the construction period.

Regarding traffic noise, the *General Plan* provides noise compatibility guidelines. As traffic increases, noise levels adjacent to roads that carry project-generated traffic would increase. The potential exists for the noise levels along some transportation corridors to increase so they could go from "generally acceptable" to "conditionally acceptable," or from "conditionally acceptable" to "generally unacceptable." Thus, to the degree that traffic flows from the project area are decreased, this potential would be reduced. A slight increase in traffic would not produce a significant impact because an increase of 1 or 2 dB is normally not noticeable. Consequently, the No Project and Compact Alternatives are superior to the other alternatives. Within the project, noise mitigation can be accomplished by setbacks from arterial streets and use of sound barrier walls or earth berms where anticipated noise levels fall outside the "normally acceptable" range.

Air Quality

All development scenarios analyzed have an adverse effect on regional air quality, especially in cases where the level of service is reduced to LOS E or F. Excessive idling, braking and accelerating results in more emissions than is true of smoothly flowing traffic. For these reasons, the No Project and Compact Alternatives have advantages over the other alternatives.

Visual Quality/Aesthetics

The alternatives all reduce the number of hillside and ridgecrest units. All but the Compact Alternative show two village centers. There is some basis for viewing the village center as a focal point/the heart of the community. One well-located and well-conceived village center has advantages over two neighborhood retail centers. The Reduced Density—50 Percent Alternative was superior to most other land use plans by providing open space along the south side of Camino Tassajara, west of the Finley Road intersection. The Compact Alternative does the best job of transitioning from urban development (limited chiefly to the Alamo Creek watershed) to agricultural areas (east of the planning area), by allowing 5-acre ranchettes on the floor of the Tassajara Valley and 80-acre ranchettes in the hills on the east side of the Tassajara Valley. However, the Compact Alternative achieves relatively high densities. This in turn requires mass grading and results in the same flaws within the urban area as those that characterize the proposed project. The visual quality issues include ridgecrest grading, continuous development along Camino Tassajara, and loss of the minor ridges which come down to the road on the south side of Camino Tassajara.

Public Utilities

The No Project Alternative would have the least impact on public utilities as existing agricultural properties would most likely continue to utilize water wells and septic systems. The three reduced alternatives would not differ except for the demand. The water, wastewater and recycled water demands on DSRSD facilities for these alternatives are as follows:

Alternatives	Water	Wastewater	Recycled Water
Reduced Density-25%	1.65 m gd	0.9 mgd	1.09 mgd
Reduced Density-50%	1.5 mgd	0.61 mgd	0.675 mgd
Concentrated Development	1.65 mgd	0.8 mgd	1.05 mgd

Capacities or sizes of the water distribution system components may be affected under each alternative as the land uses differ. The capacity of the required water treatment plant and transmission pipelines from the South Bay Aqueduct to the valley may also be reduced based upon the overall densities of each alternative. The 50 percent reduced alternative would affect the water distribution system components

and treatment plant capacity the least. The same would be true with the wastewater component. The less wastewater that is generated, the less of a demand on the capacity of the treatment facilities.

The Compact Alternative assumes water supply by EBMUD and wastewater treatment by CCCSD. Use of recycled water is not assumed. This alternative would have the least impact on public utility providers. The mitigated alternative would generate a total water demand of 1,126,000 gpd and generate a total of 440,000 gpd of wastewater.

Impacts on all other utilities is based upon the demand created by the number of dwelling units. Of the development alternatives, the Compact Alternative would create the least amount of impact when compared to the others. Relocating the project to an alternative site would have the same impacts as the proposed project.

Public Services

The No Project Alternative would create the least amount of impacts to schools, parks/recreation facilities, police and fire services. The three development alternatives would generate a range of students as follows:

Grades	Reduced Density-25%	Reduced Density-50%	Concentrated Alternative	Compact Alternative*
K-5	1,033	698	934	486
6-8	485	334	444	231
9-12	809	553	740	385

^{*} Includes students from Wendt Ranch.

Both the 25 percent reduced density and concentrated alternatives provide for two school sites which could accommodate the number of elementary students from each alternative. The 50 percent reduced alternative provides for only one site and the number of students generated by this alternative would exceed the capacity of a new school which is built to house 500 students. Either another site would need to be provided to accommodate the additional students of this project, as well as from Wendt Ranch and Tassajara Meadows (if approved), or students may be required to attend other facilities within the District. This would create significant crowded conditions at other schools.

The Compact Alternative would generate the least number of students and the one school site shown on the mitigated plan would be adequate to accommodate elementary-age children from this project, the Wendt Ranch development and Tassajara Meadows. Since the latter project has not been approved, the exact number of units is unknown, but the total number anticipated is below the capacity of a new school.

The demand for police and fire services is the least with the No Project Alternative, followed by the compact and 50 percent reduced alternatives. The compact alternative would generate the need for five additional police officers; the 50 percent reduced alternative would generate the need for seven officers; and both alternatives would generate the need for one-and-one-half cars. A valley substation would continue to be required either as a part of the Tassajara project or in Dougherty Valley. The existing fire station would need to be upgraded to provide an urban level of service for this project and others recently approved.

Only the 25 percent reduced alternative continues to provide a community park recreational facility. The other alternatives have eliminated this park, or replaced it with hilly, upland park area that cannot be used for organized sports activities.

Cultural Resources

The Compact Alternative constricts the footprint of urban development lands designated to approximately 463 acres and there are no known archaeologic sites within this area (excluding Wendt Ranch). The grading for this alternative is similar to the proposed project within the area proposed for urban development. For that reason, the Compact Alternative is the most sensitive to potential archaeologic constraints. Because the Concentrated Development Alternative limits development to approximately 800 acres, it is superior to the Reduced Density—25 Percent and —50 Percent Alternatives.

Jobs/Population/Housing

The No Project and Compact Alternatives would be the least effective in providing housing affordable to lower-income groups. The compact alternative may provide some housing for moderate- and middle-range incomes, although the number of units would be limited and this would contribute to the deficiencies in housing stock priced in the middle-cost ranges by 2010.

The other development alternatives, as with the proposed project, would offer no new housing units affordable to lower-income households. They will, however, contribute to the housing need in the Tri-Valley region for moderate- and middle-range incomes. The 25 percent reduced alternative provides the greatest opportunity to meet the housing need for moderate- and middle-range incomes.

The No Project and Compact Alternatives would not essentially provide any jobs. The other three development alternatives each include mixed-use areas that allow for commercial, office and retail businesses. Each alternative would be reduced proportionately from the proposed project. Thus, the 25 percent reduced alternative would provide the most jobs because it allows the most acreage designed for Mixed Use compared to the other alternatives.

Environmentally Superior Alternative

CEQA requires that an Environmentally Superior Alternative be identified. Table 6.8-1 provides a comparison that attempts to empirically rate the sensitivity of each alternative with respect to the proposed project. As the table indicates, reducing density and concentrating development may reduce some impacts (i.e., traffic congestion), but it may make other impacts worse (i.e., providing affordable housing) and other environmental factors may not be affected (i.e., a reduced density project that does not provide wildlife corridors may have the same limitations as the proposed project). There is no formula or simple criteria to rate the relative importance of environmental factors. Nevertheless, in the Tassajara Valley and the Tri-Valley as a whole, traffic and circulation are extremely important factors in determining an evaluation of proposed land uses.

This is especially true of the Tassajara planning area because it is so far from freeways. Its traffic affects a large number of local roads and intersections, many of which are marginally adequate to carry the traffic generated by existing developed lots and previously approved (but not yet built) projects. Other critical factors that must be recognized are as follows:

- 1) The Contra Costa County Growth Management and Congestion Management Program requires that review of major land development projects include an evaluation of the development's impact on major road facilities. The evaluation must be made of the impact relative to the Traffic Service Objectives established for Routes of Regional Significance. These regulations are intended to keep levels of service on the roads at an acceptable level.
- Mitigation of traffic impacts requires site-specific measures. However, the mitigation must be acceptable to the local jurisdiction. For example, if mitigation of a traffic impact at the Crow Canyon/Camino Tassajara intersection requires three left-turn lanes but the Town of Danville is opposed to more than two left-turn lanes—and will not issue permits for the work, the mitigation measure may not be feasible.

Based on the preponderance of data, but especially the traffic analysis, the No Project Alternative is selected as environmentally superior. CEQA Guidelines (Section 15126(d)(4)), however, state that "if the environmentally superior alternative is the No Project Alternative, the EIR shall identify an environmentally superior alternative among the other alternatives." Thus, the Compact Alternative is the next best alternative to the project. Containing the development to the northern portion of the planing area, many impacts associated with the project are eliminated, with the exception of drainage, jobs/housing, and park/recreational facilities. From a land planning point of view, the Compact Alternative contains development to within a logical, urban planning boundary, thereby leaving the remaining project area in agricultural use. It also could be served more efficiently by water and watewater utilities without extending pipelines throughout the valley.

TABLE 6.8-1 COMPARISON OF ALTERNATIVES TO PROPOSED PROJECT

Alternatives	No Project	Reduced Density-25%	Reduced Density-50%	Concentrated Development	Compact Alternative	Off-Site Alternative
Land Use/Planning Policy	R	М	М	R	R	U
Carlery/Saignaiaity	D	M	M	R	M	P
Flood Hazards/Drainage	R	P	W	W	W	U
Biological Resources	D	P	Р	M	R	U
Traffic and Circulation	R	M	М	M	R	M
Noise	R	P	R	Р	R	P
Air Quality	p	P	R	P	R	P
Visual Quality/Aesthetics	R	M	M	M	R	U
Public Utilities	R	M	М	M	R	P
Public Services: Fire/Police Schools Parks/Recreation	R R R	P M W	P R W	M M R	M R W	P P P
Cultural Resources	R	P	P	M	R	P
Jobs/Population/Housing	W	P	M	M	M	U

W Impacts more severe than project.

P Same impacts as project.

M Moderately reduced impact when compared to project.

R Very substantially reduced impact when compared to project.

U Unknown.

Source: Mills Associates, 1997.

With regard to drainage, the alternative would result in small detention basins that represent an inefficient use of land, are more costly to maintain, and would not be maintained by the Flood Control District. Over the long-term, such basins would not function as designed unless there was an iron-clad commitment that guaranteed maintenance. With regard to the site plan for the Compact Alternative, no high-density multiple-family residential units are shown, which traditionally have been used to meet affordable housing demand, although it does provide a housing supply for moderate-middle range incomes. The number of jobs will be limited. Additionally, this alternative lacks adequate park/recreation facilities (parks and schools) and the proposed densities appear high, given the terrain and other constraints. Finally, without a commitment to providing space for public services and gathering places in the village center, the Tassajara project would merely be a 2,000-lot subdivision, and fall short of its goal of creating a sense of place.

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7.0 REPORT PREPARATION

EIR AUTHORS

Contra Costa County

Community Development Department

651 Pine Street, N. Wing, 4th Floor

Martinez, CA 94553

James Cutler, Assistant Director for Comprehensive Planning

Catherine Kutsuris, Senior Planner

Project Applicant

Tassajara Valley Property Owners Association

417 Montgomery Street, Suite 1000

San Francisco, CA 94104

Jim Black, Development Coordinator

PROJECT TEAM

Mills Associates

1042 Country Club Drive, Suite 1A

Moraga, CA 94556

Carolyn A. Mills, B.A.

Donald Dean, M.C.P.

Jean Safir, M.C.P.

Linda Day, Graphics, Report Production, Editing

Lynne LeRoy, Report Production, Editing

Alan Marshall, Graphics

SUBCONSULTANTS

Donald Ballanti Certified Consulting Meteorologist - Air Quality

1424 Scott Street

El Cerrito, CA 94530

Donald Ballanti, Principal

Barton-Aschman Associates, Inc. - Traffic and Circulation

100 Park Center Plaza, Suite 450

San Jose, CA 95113

At van den Hout, Principal

Steve Hough, Senior Associate

Cannon Design Group - Visual Quality/Aesthetics 40 Gold Street San Francisco, CA 94133 Larry Cannon, Principal

Economic and Planning Systems - Jobs/Population/Housing 1815B Fourth Street Berkeley, CA 94710 Walter Kieser, Principal

Environmental Collaborative - Biological Resources 127 Western Drive Pt. Richmond, CA 94801 James Martin, Principal

Henderson & Associates - Photomontages
P.O. Box 735
Gualala, CA 95445
Charles Henderson, Principal

Illingworth & Rodkin, Inc. - Noise
85 Bolinas Road, #11
Fairfax, CA 94930
Richard Rodkin, P.E., Principal

Darwin Myers Associates - Geology/Seismicity/Soils, Flood Hazards/Drainage/Water Quality 1308 Pine Street
Martinez, CA 94553
Darwin Myers, Principal

William Self Associates - Cultural Resources
Box 2192
Orinda, CA 94563
William Self, Principal

ORGANIZATIONS AND AGENCIES CONTACTED

Alameda County Flood Control and Water Conservation District - Zone 7
Jarnail Chahal, Water Resources Engineer III
Dennis Gambs, Chief of Water Supply Engineering
Charles van Katwyck, Chief, Flood Control Engineering Section
Vincent Wong, Assistant General Manager

Alameda County Waste Management Authority Lois Clark, Associate Engineer

California Department of Fish and Game Terry Palmisano, Wildlife Biologist

Central Contra Costa Sanitary District Russell Leavitt, Planning Assistant

City of Dublin Sepehri Mehran, Traffic Engineer

City of San Ramon
John Dillon, Traffic Engineer

City of San Ramon Community Center Janice Parker, Administrative Clerk

Contra Costa Community College District
Thomas Beckett, Director of Facilities and Planning
Robert Jensen, Chancellor

Contra Costa County Community Development Department
Louise Aiello, County Solid Waste Project Manager
Dennis Barry, AICP, Deputy Director
Jim Cutler, Deputy Director, Comprehensive Planning
T.S. Khanna, Flood Plain Administrator
Charles Zahn, Assistant Director of Conservation Program

Contra Costa County Sheriff-Coroner

Julie Ryan, Administrative & Community Services

John Snell, Senior Analyst, Administrative & Community Services

Dublin San Ramon Services District
Robert Gresens, Planning Permit Division Supervisor
Bert Michalczyk, Technical Services Manager
Robert Swanson, Manager of Wastewater Services

TASSAJARA GENERAL PLAN AMENDMENT EIR TECHNICAL APPENDICES

TASSAJARA GENERAL PLAN AMENDMENT EIR TECHNICAL APPENDICES

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APPENDIX A

TVPOA PLAN OF SERVICE INVESTIGATION - EXECUTIVE SUMMARY

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TVPOA PLAN OF SERVICES INVESTIGATION - EXECUTIVE SUMMARY

INTRODUCTION, PURPOSE AND SCOPE

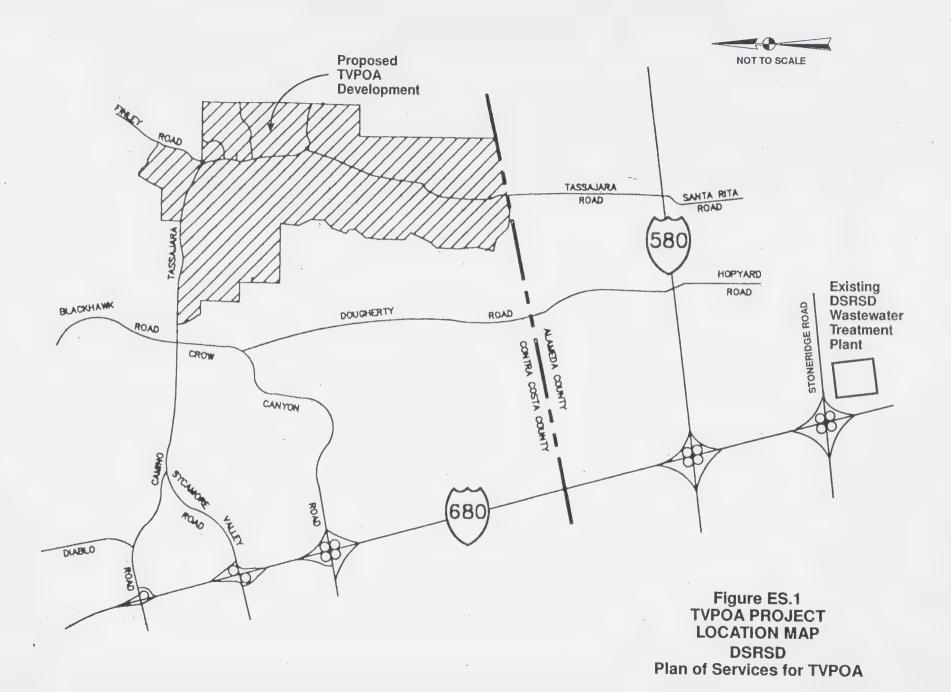
The Dublin San Ramon Services District (DSRSD) commissioned this investigation of potable water, recycled water, and wastewater options for the Tassajara Valley Property Owners Association (TVPOA) proposed project. The purpose of this Plan of Services Investigation is to provide a planning tool for DSRSD and TVPOA to be used in further evaluating infrastructure for the proposed development. The analyses were done in a framework of integrated water resources planning whereby the interconnection between all three water resource elements is considered in the study. This Plan of Services Investigation is intended to provide a sensible basis for future detailed project planning.

The scope of this Plan of Services Investigation was based on quantifying TVPOA service needs and identifying and evaluating project elements to the extent that their general characteristics and relative viability could be determined. This type of preliminary investigation results in approximate level of service requirements which should be refined through more detailed study. The results are intended to provide key planning information and guidelines without developing details on every potential aspect of the project.

This Plan of Services Investigation provides a basis for DSRSD to consider the policy implications of providing services and potential detailed project planning and facilities design. One of the basic policies that this analysis is based on is that there shall be "no net impact" on the Livermore Amador Valley Wastewater Management Agency (LAVWMA) export pipeline. For the purposes of this study, "no net impact" means that on a monthly average basis, no average dry weather wastewater flow (ADWF) from TVPOA will be discharged through the LAVWMA system (only wastewater flows resulting from wet weather storm surge may be discharged through LAVWMA as DSRSD capacity allows). For this study, ADWF is defined as the average flow during the lowest flow month. This is a simplification of the concept of ADWF but is not significantly different from the use of the three low flow months as applied to the DSRSD permit. All ADWF will be recycled for irrigation or other use on a monthly average basis.

PROJECT DESCRIPTION

The TVPOA project is located on a site approximately 2,500 acres in size which is situated approximately 2.5 miles north of Highway I 580 and approximately 5 miles East of Highway I 680 as shown in Figure ES.1. The southern boundary of the site borders on the Alameda/Contra Costa County border, the northern boundary is adjacent to the Blackhawk development, the western boundary is adjacent to the proposed future Windemere Ranch development, and the eastern boundary is along rolling hills adjacent to sparsely populated ranch lands. A valley from



500 to 700 feet elevation bisects the TVPOA area generally from south to north with hills rising up to 1,000 feet to the west, east, and north. There is a high point in the northern extent of the development where the east and southern parts of the development drain to the south and the western portion drains to the west through the proposed Windemere development.

The developer has prepared a proposed land use plan for TVPOA and anticipates that the project will build out over a period 20 years or longer. The developer also assumed three phases of development however no timing of phases was assumed for the Plan of Services Investigation. These three phases are used as the basis for this analysis, but are not necessarily representative of the actual phasing that may take place.

BASIS OF EVALUATION

The analyses are based first on DSRSD policies and practices, and second on evaluation of results of available studies and reports relevant to the needs of TVPOA. In other words, this study is based on existing work approved by DSRSD and does not include fundamental new research.

This Plan of Services Investigation was conducted under a number of basic assumptions provided by the District and characteristic of this level of investigation. The following basic assumptions governed this Plan of Services Investigation:

General

- Overall viability of potential options was considered prior to evaluating costs.
- Capital costs were assessed for major infrastructure only.
- Operations, maintenance, power, and replacement costs were only assessed to the extent they were useful in comparing alternatives if they existed.
- Potable water, wastewater, and recycled water services will be operated and maintained by the Dublin San Ramon Services District.
- No timetable was associated with project phasing.
- Flexibility is possible within project phasing as long as basic infrastructure requirements are met.
- Developing options for Plans of Service were based on first considering feasible "on-site" alternatives and then considering "off-site" alternatives if the "on-site" alternatives were infeasible.

Potable Water

- Potable water pumping will take place between 8:00 p.m. and 4:00 a.m. (8 hours) to take advantage of off-peak power costs (see below for more information).
- A source of raw water was assumed to be available from the South Bay Aqueduct (SBA) near Highway I 580.
- Treatment was considered through Zone 7 or an independent system.
- Seasonal potable water storage was not required.

Wastewater

• Wastewater flows must meet the Districts "no net impact" requirement as follows:

No Average Dry Weather Flow (ADWF) from TVPOA may be delivered into the Livermore Amador Valley Wastewater Management Agency (LAVWMA) pipeline.

For the purposes of this investigation, ADWF is defined as the average flow during the lowest flow month.

Wastewater flows resulting from wet weather storm surge may be discharged through the LAVWMA pipeline as DSRSD capacity allows.

Wastewater flows during significant storm events must be stored until DSRSD capacity in LAVWMA is available.

The design storm event is the February 1986 event experienced at DSRSD adjusted for TVPOA sewered area.

• The use of a satellite treatment plant was considered only under the scenario of providing all TVPOA recycled water needs (no pipeline from DSRSD to TVPOA).

Recycled Water

- Recycled water pumping will take place between 8:00 p.m. and 4:00 a.m. (8 hours) to take advantage of off-peak power costs.
- Non-storm surge wastewater flow will be recycled on a monthly average basis.
- Recycled water for irrigation use will meet the standards commonly known "unrestricted use" outlined in Title 22 of the California Code of Regulations.

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- Recycled water irrigation north of the County line (fringe basin) will not adversely
 affect groundwater south of Highway I 580 (central basin) and would be a
 manageable source of water.
- Recycled water use was maximized on TVPOA property to the extent that it offset ADWF generation.
- Only areas controlled by institutions or management associations such as the golf course, parks, medians, and multi-family housing, were considered for recycled water irrigation.
- For the purpose of this study it was assumed that brine from reverse osmosis demineralization may be discharged through LAVWMA as long as no net ADWF is discharged. More research into reverse osmosis treatment and brine disposal is necessary, however.
- The use of demineralization and groundwater recharge was minimized and could be eliminated if, upon further research, adequate seasonal storage were located.

Off-Peak Pumping

The concept of pumping potable and recycled water during off-peak hours was developed by the District to take advantage of lower energy costs. Since pumping takes place over a shorter period of time, larger pipes, pump stations and equalization reservoirs are required than with 24 hour pumping. The eight hour pumping concept tends to result in higher capital costs and lower operating costs. This Plan of Services Investigation was based on providing components to meet the eight hour pumping schedule, although the costs and benefits of this should be further investigated prior to finalizing a Plan of Services.

RECYCLED WATER REGULATORY SUMMARY

The regulations regarding the use of recycled water in California were developed by the Department of Health Services which are contained in Title 22 of the California Code of Regulations. These regulations are administered through the Regional Water Quality Control Board (RWQCB). The DHS and the governing RWQCB were contacted about the potential TVPOA water recycling project. The DHS stated that their published current regulations would be the basis of any permit developed by the RWQCB and that the DHS may choose to comment on any draft permit. The RWQCB stated that they can develop a draft permit for the project and would meet to discuss permit provisions following the development and submission to the RWQCB of a project report describing site conditions, uses of recycled water, and other characteristics of the proposed project.

The RWQCB stated that Order No. 93-159, Water Reuse Requirements for Alameda County Flood Control and Water Conservation District, Zone 7 ("Zone 7"), City of Livermore ("Livermore"), and

Dublin San Ramon Services District ("DSRSD") would serve as the basis for the development of a new permit for the TVPOA project.

Irrigation of landscaping on the TVPOA project site with recycled wastewater, along with injection of recycled wastewater into potable and non-potable aquifers are acceptable uses of recycled water from a regulatory standpoint as long as basic treatment and management requirements are met.

ON-SITE SERVICE NEEDS

Basic planning criteria were developed for TVPOA potable water, recycled water and wastewater services based on existing DSRSD planning criteria, TVPOA development criteria, and information available regarding similar projects. Information from these existing sources was adjusted to suit TVPOA circumstances without performing any new research or developing new criteria.

The overall potable water and recycled water service requirements are summarized in Table ES.1 and wastewater requirements are summarized in Table ES.2. The development of these values is discussed in the following sections.

Table ES.1 Potable Water and Recycled Water Service Needs for Buildout Conditions DSRSD Plan of Services Investigation for TVPOA						
Condition	Potable Water	Recycled Water				
Average Day, mgd	2.79	1.26				
Maximum Day, mgd	7.00	4.02				
Annual Total, ac-ft.	3,120	1,420				

Table ES.2 Wastewater Service Needs for Buildout Conditions DSRSD Plan of Services Investigation for TVPOA				
Condition	Wastewater			
Average Dry Weather Flow, mgd	1.26			
Peak Dry Weather Flow, mgd	2.34			
Total Design Storm Event Peak Flow (includes ADWF)	5.05			

Interior Water Use

Potable water will be used at TVPOA inside of buildings for a number of purposes including drinking, cooking, washing, and toilet flushing. Information from previous studies was assessed and a figure of 60 gallons per person per day for interior water use was selected. Interior water use was assumed to be essentially constant throughout the year since it is generally not affected

by the weather. The total interior potable water use is anticipated to be approximately 1,000 acre feet per year (ac-ft/yr) which is nearly 900,000 gallons per day (gpd) on the average.

Exterior Water Use

Exterior water use is based on irrigation of cool season turf grass (commonly planted turf that will grow year-round if irrigated) with adjustments for other types of plants and accounts for seasonal variations in plant water requirements due to weather. The total annual irrigation requirement is anticipated to be approximately 3,500 ac-ft/yr of which 40 percent of it is met with recycled water. The area irrigated with recycled water was sized by TVPOA to utilize all average dry weather wastewater flow on an annual average basis as discussed in a following section. Future additional interior and exterior conservation measures could reduce the overall water requirement, however, this possibility was not considered in this investigation.

The overall interior and exterior potable water demand anticipated for TVPOA is 1,560 gpd per residential acre while similar developments within the existing DSRSD service area use approximately 1,440 gallons per residential acre. The difference in water use values is probably due to larger lot sizes for the TVPOA project requiring more irrigation water than in current developments served by DSRSD.

There is essentially no demand for irrigation water in the winter and a high demand in the summer. The average day maximum month demand is anticipated to be approximately 2.5 times the average day demand and the maximum day demand is anticipated to be approximately 3.2 times the average day demand based on information from the University of California Agricultural Extension Service and similar operating projects.

Exterior water demands for irrigation will be met through the use of both potable water and recycled water. Recycled water is inappropriate for some types of irrigation due to regulatory restrictions, as well as plant sensitivities and overall management considerations. For example, potable water will be used for irrigation of landscaping at all single family and similar dwellings because of regulatory and management concerns.

Wastewater

Wastewater flow is comprised of base wastewater flow, dry weather infiltration, and wet weather infiltration and inflow. The total Average Dry Weather Flow (ADWF) was calculated based on 60 gallons per capita per day base wastewater flow plus 60 gallons dry weather infiltration per dwelling unit. These figures were developed based on current planning for East Dublin and historical DSRSD flows. The total ADWF for TVPOA under buildout conditions is anticipated to be 1.26 mgd, all of which is planned to be recycled for on site irrigation of landscaping.

The ADWF is equivalent to 152 to 242 gpd per dwelling unit depending on the type of dwelling. These values compare well to the existing DSRSD service area which are approximately 180 to 220 gpd per average dwelling unit. Future additional water conservation measures may reduce the ADWF, however, this possibility was not considered in this investigation.

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Wastewater flow varies throughout the year due to infiltration and inflow of water into the collection system during wet weather events. The existing DSRSD wet weather model was adjusted for the TVPOA development to assess the anticipated average monthly wastewater flow. The variation of the wastewater flow during the day was accounted for by the use of the DSRSD peaking factor formula.

DSRSD established a design storm event for TVPOA equivalent to the February 1986 event experienced at DSRSD, scaled for TVPOA sewered area. DSRSD provided the basis for calculating a design storm event hydrograph which was assumed to be in addition to the average wastewater flow for the peak month. These wastewater storm flows must be stored by TVPOA until DSRSD capacity for them is available which was assumed by DSRSD to be 10 days for the purposes of this study. The ten day period was assumed by DSRSD to be sufficient for the DSRSD storm flow peak to subside and allow capacity for TVPOA wet weather flow discharge.

ON-SITE FACILITIES

On site facilities to provide potable water, recycled water and wastewater service include pipelines, pump stations and reservoirs. Pipelines were routed through planned streets and were sized based on DSRSD criteria using the computer model Cybernet for the potable water and recycled water systems and Hydra for the wastewater system. Pump stations and other affected facilities were sized based on the DSRSD 8-hour pumping criteria that takes advantage of off peak power costs. Pump stations were sized with 33 percent standby capacity and were located at pressure zone boundaries for water pump stations and at the low point in the collection system for wastewater.

Reservoirs were sized based on DSRSD potable water system criteria accounting for working storage, emergency storage and fire storage. Two potable water reservoirs and one recycled water reservoir per pressure zone were sited at locations which were at appropriate elevations and minimized piping. Actual siting of reservoirs and pump stations and routing of piping could be modified from what was assumed in this study as long as the basic hydraulic requirements were met.

The TVPOA development encompasses DSRSD potable water pressure zones 2, 3, and 4. There are reservoir locations on the TVPOA site meeting DSRSD criteria for pressure zones 2 and 3. There are no reservoir sites available on the TVPOA property that meet the DSRSD elevation criteria for pressure zone 4. TVPOA has only planned development in the lower segment of DSRSD pressure zone 4. The District has advised that the elevation of the pressure zone 4 reservoir for TVPOA could be lowered so that all reservoirs could be sited on TVPOA property while meeting the pressure requirements for all units. This is possible since the TVPOA pressure zone 4 is isolated and could never be interconnected with pressure zone 4 for adjacent developments.

Potable Water Distribution System

The infrastructure for the potable water distribution system is summarized by development phase in Table ES.3. The District recently adopted a major infrastructure policy where potable water

Table ES.3 Potable Water Distribution System Components
DSRSD Plan of Services Investigation for TVPOA

		Amount for each Phase			Total for
Description	Units	1	2	3	Buildout
Potable Water Mains					
10" Diameter ⁽¹⁾	LF	5,600		5,200	10,800
12" Diameter ⁽¹⁾	LF	5,100	3,800		8,900
14" Diameter	LF	3,600	9,300		12,900
16" Diameter	LF	3,400	6,100		9,500
20" Diameter	LF	12,600	8,000		20,600
24" Diameter	LF	19,700	2,600		22,300
30" Diameter	LF	1,500			1,500
36" Diameter	LF	7,400			7,400
Total		58,900	29,800	5,200	93,900
Pump Stations ⁽²⁾					
Zone 2/3 (23.6 mgd)	EA	1			1
Zone 3/4 (10.8 mgd)	EA	1			1
Reservoirs ⁽³⁾					
Zone 2 (363,000 gallons)	EA			2	2
Zone 3 (2,974,000 gallons)	EA	2			2
Zone 4 (1,873,000 gallons)	EA	2			2

(1) Not included in DSRSD major infrastructure policy.

(2) Based on installed capacity, (includes 33 percent standby capacity).

pipelines 14 inches in diameter and greater are the subject of District financing, however, smaller pipelines are considered here for modeling purposes. This assessment of on-site infrastructure requirements only includes potable water mains 10 inches in diameter and larger which does not include pipelines for small areas or connections to individual units. The projected on-site potable water distribution system cost under buildout conditions is approximately \$28,000,000.

⁽³⁾ Two reservoirs per zone, each of the stated capacity. Size based on required working storage, emergency storage, and fire flow storage.

Recycled Water Distribution System

The infrastructure for the recycled water distribution system is summarized by development phase in Table ES.4. The District's major infrastructure policy includes the consideration of recycled water piping 10 inches in diameter and greater which was the minimum size considered here. This assessment of on-site infrastructure requirements only includes recycled water mains 10 inches in diameter and larger which does not include pipelines for small areas or actual irrigation systems. The projected on-site recycled water distribution system cost under buildout conditions is approximately \$18,000,000.

		Amou	hase		
Description	Units	1 2		3	Total for Buildout
Recycled Water Mains					
10" Diameter	LF	6,200		5,200	11,400
12" Diameter	LF	3,900	700	dor day had	4,600
14" Diameter	LF	1,600	10,000		11,600
16" Diameter	LF	13,000	2,600		15,600
20" Diameter	LF	3,700			3,700
24" Diameter	LF	3,000			3,000
30" Diameter	LF	23,100			23,000
36" Diameter	LF	8,300			8,300
Total		76,400	13,300	5,200	94,900
Pump Stations ⁽¹⁾					
Zone 2/3 (15.3 mgd)	EA	1			1
Zone 3/4 (4.5 mgd)	EA	1			1
Reservoirs ⁽²⁾					
Zone 2 (58,000 gallons)	EA			2	2
Zone 3 (773,000 gallons)	EA	2			2
Zone 4 (327,000 gallons)	EA	2			2

⁽¹⁾ Based on installed capacity (includes 33 percent standby capacity).

⁽²⁾ One reservoir per zone. Based on required working storage only.

Wastewater Collection System

The infrastructure for the wastewater collections system is summarized by development phase in Table ES.5. The DSRSD major infrastructure policy includes only wastewater pipelines 24 inches in diameter and greater, however, smaller pipelines were considered here for modeling purposes. The projected on-site wastewater collection system project cost is approximately \$10,000,000 based on buildout conditions. The sewer system is based on a conventional gravity collection system to convey wastewater southward to the southern project boundary. As discussed in the introductory section of this report, the western portion of the development drains westward. A pump station and force main is required to convey wastewater from the low point of this region of the development over the high point so it may drain by gravity southward.

		Amoun	t for each	Phase	
Description	Units	1	2	3(1)	Total for Buildout
Sewer Mains					
8" Diameter ⁽²⁾	LF	10,300	7,900		18,200
10" Diameter ⁽²⁾	LF	6,900	1,400		8,300
12" Diameter ⁽²⁾	LF	7,300			7,300
15" Diameter ⁽²⁾	LF	15,800			15,800
18" Diameter ⁽²⁾	LF				
21" Diameter ⁽²⁾	LF	2,800			2,800
24" Diameter	LF	3,500			3,500
Total		46,600	9,300		55,900
Force Main					
8" Diameter	LF	8,200			8,200
Manholes ⁽³⁾	EA	100	20		120
Pump Station, Number	EA	1			1
Pump Station, Capacity ⁽⁴⁾	MGD	235			2.3
Storm Storage Reservoir, Number	EA	1			1
Storm Storage Reservoir, Capacity	MG	3.9			3.9
Storm Storage Pump Station, Number	EA	1			1
Storm Storage Pump Station, Capacity(4)	MGD	1.40			1.4

⁽¹⁾ Phase 3 does not include infrastructure cost because individual street sewers are not included in this estimate. Sewer mains to serve Phase 3 would be built during earlier phases.

⁽²⁾ Not included in DSRSD major infrastructure policy.

⁽³⁾ Manholes spaced every 500 feet.

⁽⁴⁾ Installed capacity, includes 33 percent standby capacity.

The District has established that TVPOA will be required to have the capability to store wastewater flow resulting from the design storm event for ten days from the beginning of the storm, and to discharge stored wastewater into LAVWMA over a five day period. This will require 3.9 mg of storage capacity located at the southern project boundary and a 1.40 mgd pump station (includes 33 percent standby capacity) to empty the stored wastewater back into the sewer system when DSRSD has capacity in the LAVWMA system.

OFF-SITE FACILITIES OPTIONS

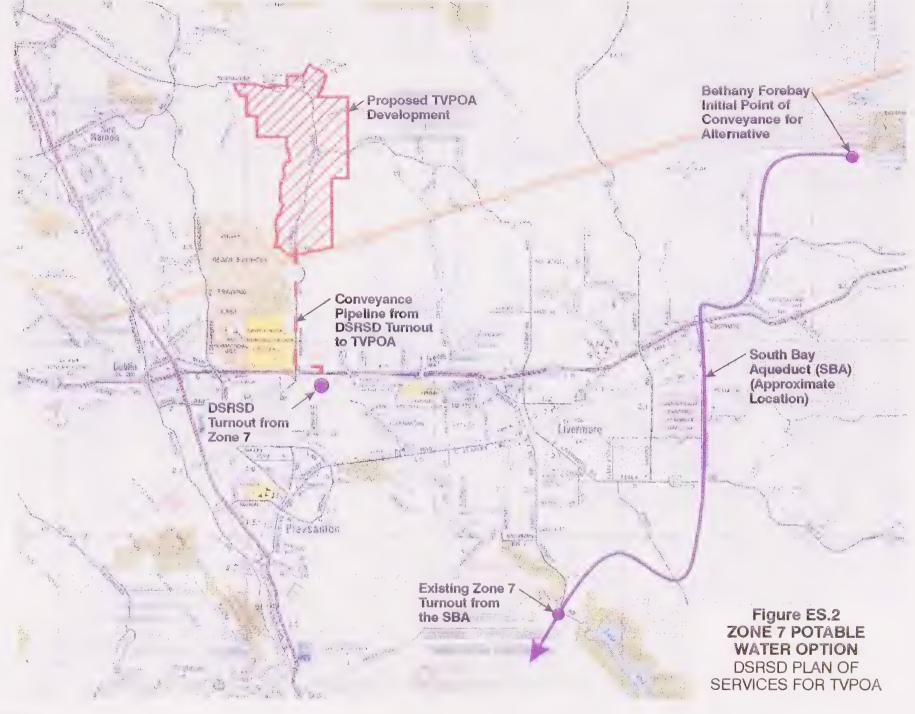
Off-site facility options for providing potable water, recycled water, and wastewater service to TVPOA were considered based on policy, technical, and economic factors and the preferred options were selected.

Potable Water Options

Several options that could conserve existing DSRSD potable water uses were considered as a potential source of potable water for TVPOA. The amount that could be freed up through conservation for potential use was relatively small and could not meet the projected TVPOA requirement. In addition, costs were uncertain, and the existing Zone 7 agreement does not allow development with conserved water. Therefore, conservation was not considered further as a water supply option.

Two options for providing potable water service utilizing a new supply of potable water were considered. The District is currently investigating a new source of raw water that would be conveyed through the south Bay Aqueduct (SBA) that could serve future area development including TVPOA.

The first option known as the Independent Option was based on construction of all new diversion, conveyance and treatment facilities to provide water to TVPOA. The second option known as the Zone 7 Option was based on contracting for diversion and treatment services from Zone 7 and conveying to TVPOA via a new turnout, pump station, pipeline, and reservoir to equalize the constant Zone 7 supply with the DSRSD 8 hour pumping schedule. The present value of these two options was evaluated based on considering one time capital costs, fixed annual charges, and annual variable charges for entitlement, acquisition, conveyance, treatment, delivery. This analysis resulted in a \$70,000,000 present value for the Zone 7 Option which was \$13,000,000 less than for the Independent Option. The Zone 7 Option was, therefore, selected as the off-site potable water service option which is schematically shown in Figure ES.2.



Recycled Water and Wastewater Options

Off-site recycled water and wastewater options were considered simultaneously due to their interconnected nature. Means for meeting seasonal storage, treatment, and conveyance requirements were considered.

Seasonal Storage

One of the basic project assumptions was that all wastewater ADWF would be recycled on the TVPOA site for irrigation. As discussed in a following section, the average dry weather wastewater flow is produced at a constant rate throughout the year while, as mentioned in this section, the irrigation demand is highly seasonal. To equalize these differences in supply and demand, a 211 mg (648 ac-ft) reservoir would be required.

As a first step in locating the required storage, TVPOA attempted to situate a reservoir of the required size on the project site. TVPOA but was unable, however, to locate more than 10 percent of the required storage volume without significantly altering the nature of the development project. TVPOA decided to initially pursue other storage options instead of changing the development plan. A future reevaluation of the surface storage option could include changing the development plan and reducing the number of units to allow space for a reservoir (which would also reduce overall service needs) and investigating off site locations for reservoir sites as well.

The focus of this investigation was the assessment of on-site solutions to infrastructure requirements to the greatest extent possible. Although the developer was unable to locate adequate storage on the project site, it may be possible to locate the required storage off-site. The assessment of potential off-site storage sites was beyond the scope of this investigation, although it is recommended that off-site options be further considered if a Plan of Services is to be further developed.

As a second step, following the on-site storage investigation, TVPOA launched the Put and Take Investigation which was intended to determine if temporary underground storage or permanent disposal of recycled water beneath the development in the Tassajara Valley could serve the seasonal storage need. The results of the Put and Take Investigation indicated that the feasibility of put and take storage of the required volume in either shallow or deep formations in the Tassajara Valley was "poor" which suggested that further pursuit of this option would not yield a significant amount of the required capacity in the Tassajara Valley so the option was not to be further considered. There may be opportunities for put and take storage off site in locations with more permeable geologic formations, although it was not investigated here.

As a third step, demineralization and potable aquifer recharge was evaluated since neither the surface storage, nor the subsurface put and take storage options appeared feasible. The demineralization and potable aquifer recharge concept was based on the research, findings, and configuration developed in the *Livermore, Amador Valley Wastewater Recycling Study*, May 1993 (Water Recycling Study). The Water Recycling Study stated that demineralization treatment at the DSRSD wastewater treatment plant and well injection in a nearby permeable aquifer was

feasible for 4,000 ac-ft/yr, which is far more than what is needed by TVPOA on a seasonal basis at buildout. The Water Recycling Study also assumed that brine discharge through LAVWMA was feasible which was assumed for the purposes of this study as well.

The concept of using reverse osmosis for demineralization of wastewater prior to injection into the central basin was assumed to be feasible based on the findings of the Water Recycling Study. A number of questions remain regarding institutional arrangements and treatment system requirements including potential need for nitrogen removal and brine discharge considerations including metals loading. It is recommended that these issues be further investigated prior to finalizing a plan of services for TVPOA, if reverse osmosis is to be further considered.

The recycled water demineralization and injection system must operate seasonally, at a minimum, to provide a recycled water use when there is no demand for irrigation, as shown in Figure ES.3. The system could also operate year round at full capacity as seen in Figure ES.3 and recycled additional wastewater for groundwater recharge.

The cost of demineralization and injection is approximately \$3,100 per ac-ft if operated at the minimum seasonal requirement (648 ac-ft/yr) and \$1,700 per ac-ft if operated at full capacity year round which could use and additional 763 ac-ft/yr of DSRSD effluent. If the groundwater injection option were implemented, TVPOA would require an additional 648 ac-ft of recycled DSRSD wastewater for irrigation during the peak demand months which is equal to the amount injected into the groundwater.

Wastewater Treatment

Both treatment at an independent satellite treatment plant on the TVPOA project site and at the DSRSD treatment plant were considered. The use of a satellite treatment plant on the TVPOA site was considered for providing treatment only as long as it could independently provide all required recycled water to the development year round.

Due to TVPOA's inability to locate seasonal storage on site, a satellite plant would not be capable of independently providing all required recycled water to the development year round. This is because a satellite plant could not meet maximum day demands without additional recycled water from the DSRSD treatment plant. The ADWF the satellite plant would process is only about a third of the maximum day demand, hence the need for additional recycled water from the DSRSD plant. A satellite treatment plant was, therefore, determined to be inappropriate since additional treatment capacity at DSRSD would be required along with a conveyance pipeline from DSRSD to TVPOA. The satellite treatment plant concept could be reevaluated if adequate seasonal storage were located on-site and recycled water treatment was not required at the DSRSD treatment plant.

All TVPOA wastewater flows will need to be treated at the DSRSD treatment plant since a satellite plant could not meet the operational requirements of the basic project assumption. The treatment capacity of the DSRSD plant will have to be expanded and upgraded to accommodate all TVPOA flow throughout the year and to produce water of the appropriate quality for the following requirements:

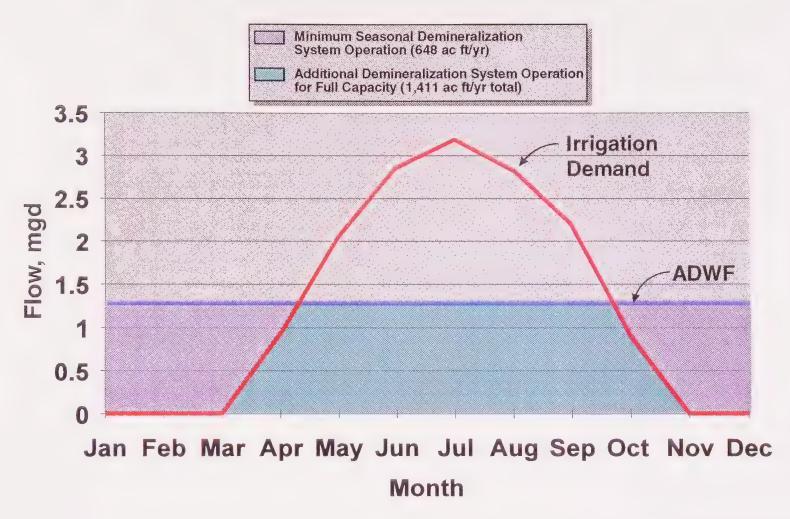


Figure ES.3
IRRIGATION DEMAND AND
DEMINERALIZATION SYSTEM OPERATION
DSRSD
PLAN OF SERVICES FOR TVPOA

- **LAVWMA discharge** which will require secondary treatment and disinfection (flows greater than ADWF only),
- Recycled water irrigation which will require secondary treatment, filtration and disinfection, and
- Potable aquifer recharge which will require secondary treatment, filtration, disinfection, conditioning, and reverse osmosis.

Wastewater and Recycled Water Conveyance

Wastewater will be conveyed from TVPOA to the DSRSD plant for treatment. TVPOA wastewater would be conveyed from the new 3.9 mg wastewater storm storage facility (assumed to a buried concrete tank be located at the southern boundary of the TVPOA project site) 22,000 feet through a new sewer to the DSRSD regional manhole near the intersection of Dougherty Road and Highway I 580. The TVPOA wastewater would then be conveyed through the existing DSRSD regional collection system to the existing treatment plant.

District staff has stated that there will likely be capacity limitations in some reaches of the regional collection system under some flow conditions, especially peak wet weather flows. The evaluation of the regional collection system was beyond the scope of this work. These capacity limitations should be further evaluated considering the possible impacts from all planned developments. Alleviating these capacity restrictions could be accomplished through replacing over capacity sewers with larger sewers, constructing additional relief sewers, or constructing equalization reservoirs upstream of restrictions to minimize flow peaks. Equalization reservoirs could be either sited at new developments or within the regional collection system.

The overall off site wastewater and recycled water concept is presented in Figure ES.4.

COST OF PREFERRED FACILITIES

The capital costs of required on site and off site infrastructure were assessed based on the three TVPOA development phases. These costs are presented in Table ES.6 for each major infrastructure element. The total estimated project cost to serve buildout conditions is approximately \$165,000,000.

Costs were based on an ENR cost index of 7000 which represents late 1996 anticipated costs. Estimated construction costs include a 15 percent low bid adjustment factor and a 20 percent estimating contingency. Project costs include an additional 30 percent for engineering, legal, and administrative costs. No land related costs such as acquisition, rights of way, or easements were considered.

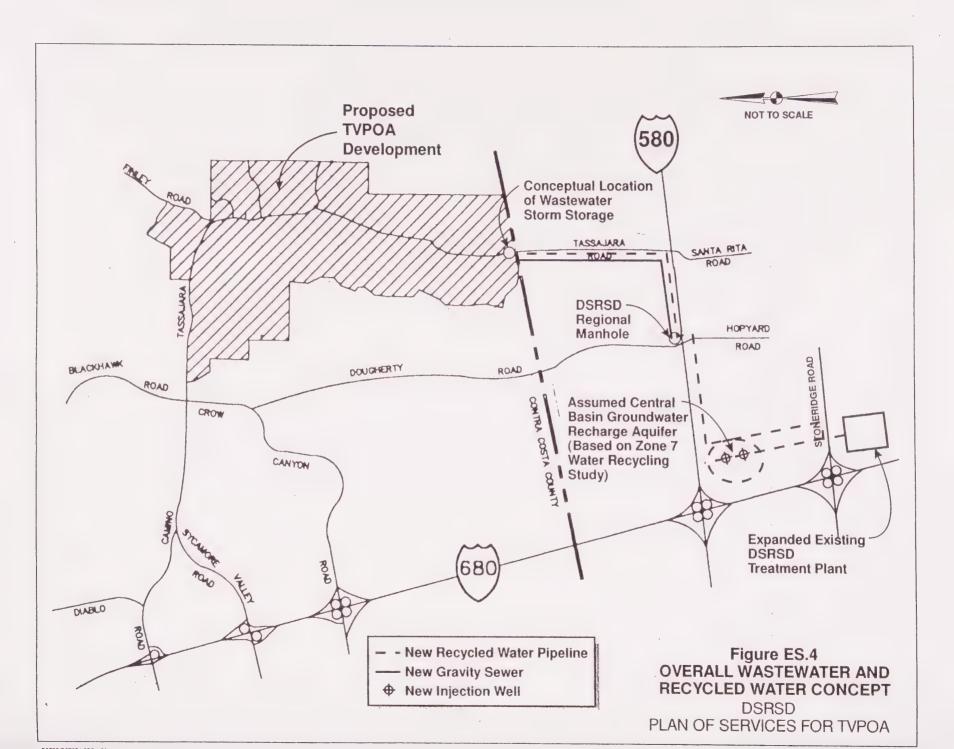


Table ES.6 Infrastructure Capital Cost Summary by I	- 12:00
	Cana 1 a
DSRSD Plan of Services Investigation for TV	

	Amo	Amount for Each Phase			
Cost Element	1	2	3	Buildout	
On-Site Potable Water System ⁽¹⁾	\$23,630,000	\$3,530,000	\$1,160,000	\$28,320,000	
On-Site Recycled Water System	15,940,000	1,270,000	440,000	17,650,000	
On-Site Wastewater , System ⁽¹⁾	7,100,000	2,670,000		9,770,000	
Zone 7 Potable Water Service to TVPOA	21,610,000	4,980,000	2,730,000	29,330,000	
Wastewater Storm Storage and Conveyance and Secondary Treatment at DSRSD	22,230,000	5,880,000	7,740,000	35,850,000	
Recycled Water Treatment and Conveyance from DSRSD to TVPOA	23,310,000	3,200,000	4,060,000	30,570,000	
Reverse Osmosis Treatment at DSRSD and Potable Water Aquifer Recharge System ⁽²⁾	5,620,000	3,900,000	3,900,000	13,420,000	
Total Infrastructure Capital Cost	\$119,450,000	\$25,430,000	\$20,030,000	\$164,910,000	

All costs are project costs at ENR 7000 including 20 percent estimating contingency and 30 percent engineering, legal and administrative costs. Does not include land related costs.

- (1) Includes piping smaller than considered by the DSRSD major infrastructure policy. Total cost for these smaller pipes considered in this study is \$1,500,000 for potable water and \$3.00,000 for wastewater based on buildout conditions.
- (3) The capacity and capital cost of reverse osmosis facilities is based on the required capacity and not whether operated seasonally or at full capacity.

TVPOA identified buildout of the development in three distinct phases. The far northern reach of the development was designated as Phase 1 which must be served from pipelines coming from the south from DSRSD. This condition tends to make the Phase 1 on site infrastructure costs relatively high (approximately 70 percent of the cost for buildout) since all the main transmission and collection pipes must be constructed under Phase 1 to serve buildout demands. Modifying project phasing could reduce Phase 1 costs but would have essentially no effect on overall infrastructure requirements and costs for buildout conditions.

RECOMMENDATIONS

The work performed in developing this Plan of Services Investigation resulted in a framework of providing potable water, recycled water and wastewater infrastructure and services to TVPOA that is technically feasible and meets the District's "no net impact" requirement. It is recommended that a number of issues be further investigated and a number of additional technical issues be considered prior to finalizing a plan of services for TVPOA.

On-Site Facilities Recommendations

The investigation of on site infrastructure needs was based on applying DSRSD planning criteria and sizing components for the developer's land use plan rather than on comparing alternatives. There are, therefore, no alternatives for sizing of basic components. The basic system components sized based on the hydraulic modeling results and the application of planning criteria should be utilized in further developing the TVPOA plan of services so they are consistent with District standards.

There are no locations within the TVPOA project boundary for pressure zone 4 reservoirs (the highest TVPOA pressure zone) based on DSRSD criteria (Elevation 1,100). It is recommended that the upper service elevation of pressure zone 4 be reduced, therefore allowing the pressure zone 4 (modified) reservoirs to be located within the existing project boundaries.

Alternate locations for reservoirs and pump stations should be considered so that the most preferable sites can be located based on actual field conditions including soils characteristics, environmental considerations or other conditions.

To allow all TVPOA wastewater to flow south along Tassajara Road, a portion of it pumped over a natural high point to flow by gravity. It is recommended that TVPOA evaluate gravity flow of this portion of the wastewater through the Dougherty Valley including infrastructure requirements and contractual agreements with other land owners so that the TVPOA wastewater pump station and force main can be eliminated.

Off-Site Facilities Recommendations

Potable water treatment and supply service for TVPOA should be obtained through the Zone 7 option which was the apparent best alternative of the two considered in this investigation. It is recommended that DSRSD continue to pursue negotiations with the agency that can supply the potable water entitlement for TVPOA. It is also recommended that DSRSD enter into negotiations with Zone 7 for the treatment and conveyance of this new potable water entitlement.

There were no alternatives to consider for conveyance of wastewater to the DSRSD treatment plant therefore it is recommended that the conveyance pipeline from TVPOA to the District's regional manhole be as sized in this analysis which is based on DSRSD standards. Previous District study indicates there may be capacity restriction in portions of the regional collection system that may

be unable to future flows under all conditions. It is recommended that the regional collection system be evaluated considering cumulative impacts of all planned developments.

The expansion of the secondary treatment capacity, upgrade of filtration facilities, and construction of reverse osmosis and disinfection facilities at the DSRSD treatment plant should be investigated in the context of incorporating the needs of TVPOA and other planned developments as well.

Seasonal storage of recycled water as an alternative to reverse osmosis and groundwater recharge should be further investigated. Consideration should be given to reducing the number of housing units in the valley of the project area to provide room for surface seasonal storage (overall reduction of units would result in overall reduction in all service needs). Alternatively, it is recommended that areas outside of the existing TVPOA project boundaries be evaluated for surface storage and/or subsurface put and take storage potential. Further investigation into on site subsurface put and take storage is not recommended unless there is substantial new evidence to indicate the availability of a significant amount of potential storage volume.

It is recommended that consideration be given to operating potential reverse osmosis facilities at full capacity year round rather than at the minimum capacity required so that the unit cost of recharged water could be reduced and the water recycling potential expanded.

The satellite treatment plant option should be reconsidered <u>if</u> adequate seasonal storage is located on or near the TVPOA project site and recycled water is not required from the DSRSD treatment plant which would maximize satellite plant utilization.

Overall Project Recommendations

Project phasing should be reevaluated by TVPOA if it is desirable to reduce initial capital costs which could be accomplished by moving Phase 1 developments closer to the southern project boundary where services initiate from. Modifying project phasing will have essentially no impact on overall project costs to serve buildout conditions, however.

Siting of individual facilities and routing of pipelines should be considered in greater detail as plans for the development evolve and should include the assessment of utility conflicts, acquisition of easements and rights of way, traffic impacts, and integration with other projects.

It is recommended that the overall life cycle costs and benefits resulting from the 8 hour pumping criteria utilized for this study be compared with the life cycle costs resulting from 24 hour pumping criteria. This analysis should include one time capital costs for required facilities as well as ongoing operations and maintenance costs.

It is recommended that project details be submitted to the RWQCB as they are developed to initiate the water recycling permit development process. It is recommended that DSRSD request draft permit requirements from the RWQCB once adequate information has been submitted for

RWQCB review. DSRSD should work with the RWQCB on negotiating permit provisions prior to development of a final permit.

The use of the LAVWMA system for wet weather wastewater flow and reverse osmosis reject brine discharge should be further investigated prior to finalizing a plan of services for TVPOA.

SUMMARY

The work performed in the development of this Plan of Services Investigation included sizing basic infrastructure and evaluating alternatives for providing potable water, wastewater and recycled water service to the development. The results of this investigation show it is technically feasible to provide all these services while meeting the District's "no net impact" requirement on the LAVWMA system.

There are a number of areas where additional research should be conducted prior to finalizing a plan of services. One of the most important areas to consider is alternatives for providing seasonal recycled water storage. A number of other areas require additional research including developing agreements and permits to implement the project as well as performing more detailed investigation of facility siting, pipeline routing, and integration into existing facilities considering other potential developments.

APPENDIX B

GEOTECHNICAL CROSS-SECTIONS



APPENDIX B GEOTECHNICAL CROSS-SECTIONS

Description of Sections

Section 1 shows an east-west section near the Alameda/Contra Costa County line. In this area, the hills and Tassajara Creek will be left natural with relatively minor grading on the valley floor. Continuation of a buttress fill can be anticipated at the east boundary of the valley floor to protect the development from the adjacent unstable/marginally stable hillside area. The mass of the buttress, its precise location, elevation, and other design details cannot be established without a comprehensive investigation. Similarly, the degree of safety provided by the buttress and its effect on land use are not yet established.

Section 2 shows a generally north-south oriented section which traverses the hillside area just east of the floor of Tassajara Valley. It shows a major fill placed in an upland valley, and a relocated intermittent stream. Placement of fill will raise the elevation of the ground by approximately 35 to 50 feet along a segment of the section. Note that slides are mapped within the area that is to receive fill. Reconstruction of the slide areas, if required, would result in the total thickness of fill exceeding 60 feet.

Section 3 is a generally east-west section across Tassajara Valley, approximately 2,000 feet south of the Highland Road/Camino Tassajara intersection. The west end of this section indicates ridgecrest units are to be constructed on a cut pad. The dwelling units would be set back from the edge of the pad to reduce their visibility.

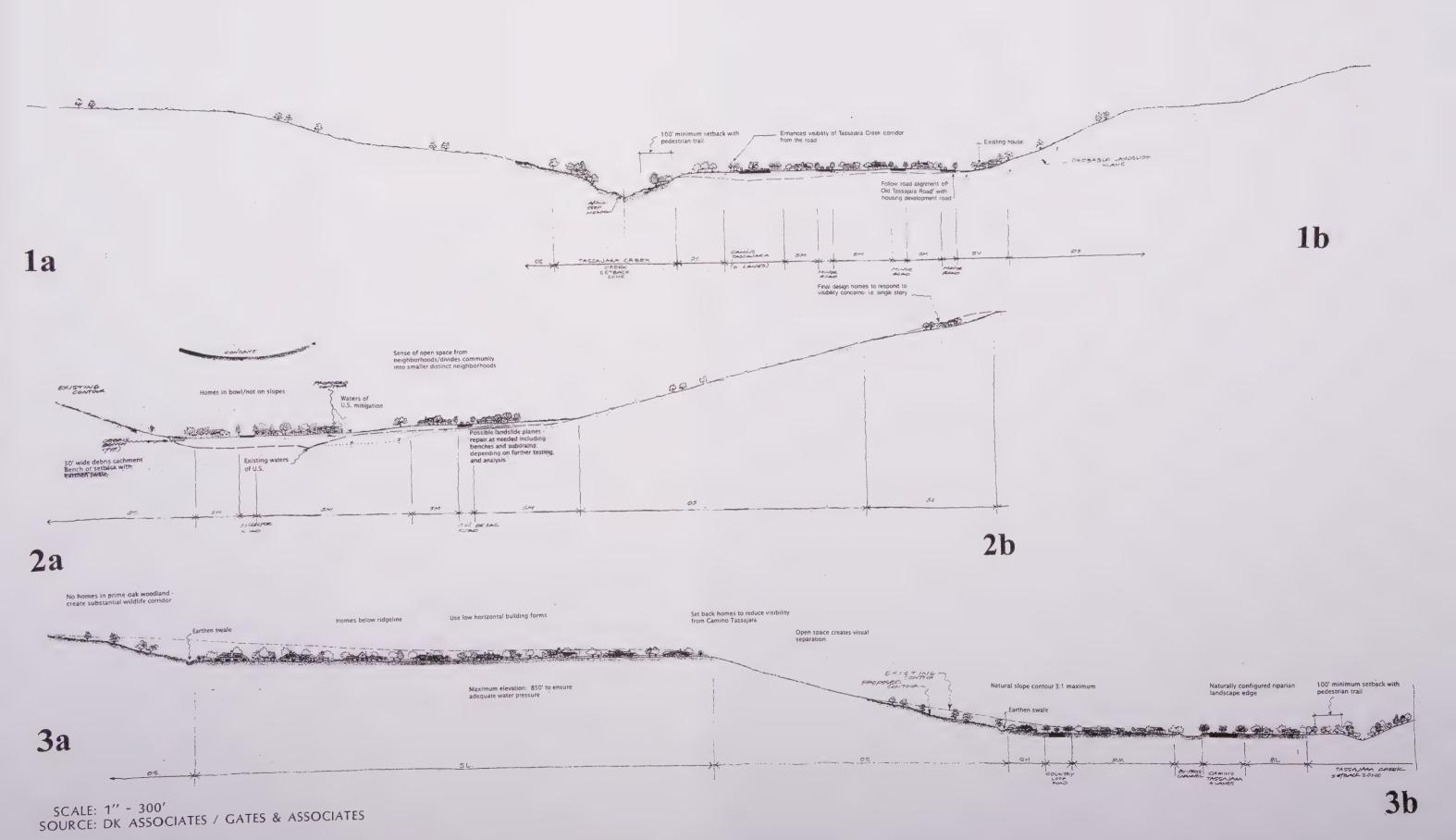
The east end of this section shows Tassajara Creek left natural with a trail in a 100-foot wide corridor (minimum) on its west bank. Further to the west of the trail corridor are multiple-family units and Camino Tassajara. Only minor grading would be required to construct these improvements. However, west of Camino Tassajara the nose of the ridge would be trimmed back to increase the width of the valley at this point, and the resulting cut slope is shown to be landscaped. (Mature trees up to 30 feet high are shown on this cut slope, which would have a gradient of 3:1 (horizontal to vertical).)

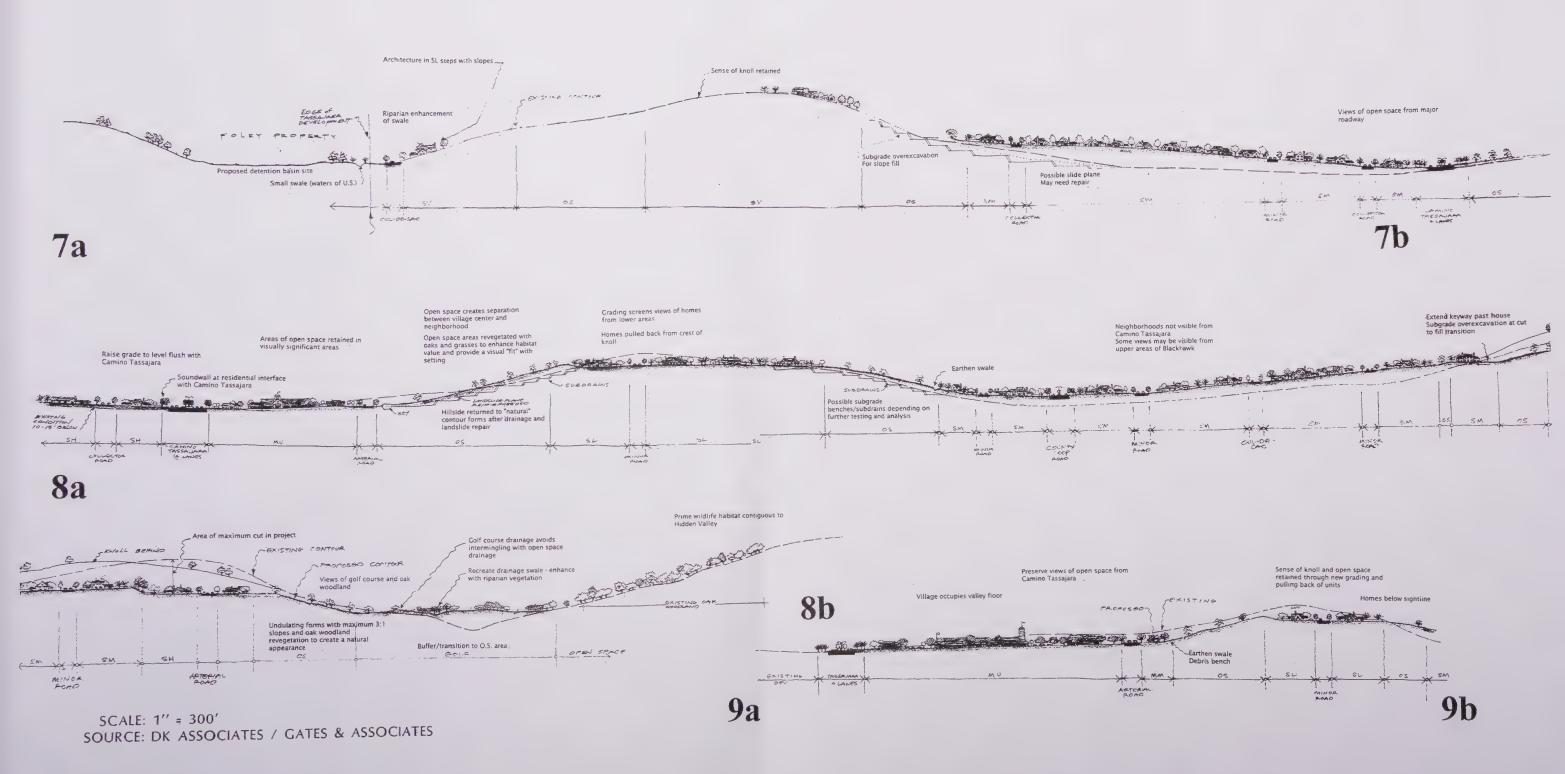
Section 7 is a generally north-south section that is 1,000 feet west of Finley Road. It extends from the proposed Tassajara Creek detention basin (on the north) to Camino Tassajara (on the south). Just south of the detention basin the section notes riparian enhancement of an existing ephemeral stream, with custom built hillside homes south of this channel (on lands to be designated SV). The ridgecrest on this section is to be lowered by up to 70 feet. This grading is not shown, but annotations on the section state that "sense of knoll retained". This implies that the grading is intended to create a broad, gently sloping area suitable for development. The slopes created would be less than 26 percent after grading, so hillside guidelines would not be operative. Section 7 indicates that these hillside homes and ornamental trees would be silhouetted on the skyline as viewed from Camino Tassajara.

Section 8 is a north-south section extending from Camino Tassajara to the ridgecrest that overlooks the Hidden Valley portion of Dougherty Valley. The grading on the north end of the section would be limited to raising the grade of low lying areas such that they would match the grade of Camino Tassajara. The hillside area just south of Camino Tassajara would be reconstructed and re-contoured. The graded slope would be contour rounded to mimic natural terrain features and the crest of the ridge would be contoured such that ridgecrest units would not be visible from most vantage points along Camino Tassajara. Instead, these units would step down the south-facing flank on the knoll and have internal views (toward Country Loop Road). Fills in the area of Country Loop Road and further south along the section range from 20 to 40 feet in thickness. Further south, another ridge would be lowered

in elevation by 100 feet. Within the golf course area (near south end of section) a fill 60 feet thick is shown, and the existing channel of an ephemeral stream would be raised in elevation and relocated.

Section 9 is a north-south section through the village center. The north end of this section approximately coincides with the east entry to Blackhawk. This section indicates that the southern portion of the village center will be in cut (depth of cut approximately 30 feet). Just south of the village center is a knoll that will have its crestal elevation lowered by 50 feet. The north-facing flank of this knoll faces Camino Tassajara. The section indicates that this slope would have a gradient of less than 3:1 and the slope would be contour-rounded to mimic a natural knoll. The section indicates some trees would be planted on the slope, and the crest of the slope would be contoured to create a berm that would partially obscure views of the ridgecrest development from vantage points along Camino Tassajara.





APPENDIX C

TRAFFIC AND CIRCULATION TECHNICAL INFORMATION

- I. Level of Service Definitions
- II. Tri-Valley Model Refinements
- III. 2010 Background Roadway Network
- IV. 2010 Background and Project Traffic Volumes
 - V. Highland Road Operations Analysis
 - VI. Traffic Service Objectives
- VII. Contra Costa County Congestion Management Program
 - VIII. Tassajara Ranch Drive Analysis
- IX. Mitigation Packages A and C Project Trip Assignments
 - X. Intersection Mitigation Measures

Level of service calculations are on file at Contra Costa County Community Development Department, Fourth Floor, Martinez, California

I. Level of Service Definitions

Table C-I.1 Level of Service Criteria for Intersections

Signalized Intersection	s	
Level of Service	V/C Ratio	Description
Α	0.00 to 0.60	Full flow, insignificant delays
В	0.61 to 0.70	Stable operation, minimal delays
С	0.71 to 0.80	Stable operation, acceptable delays
D	0.81 to 0.90	Approaching unstable, tolerable delays
E	0.91 to 0.99	Unstable operation, significant delays
F	N/A	Forced flow, excessive delays—jammed

Note: Represents average conditions for entire intersection.

Source: Transportation Research Board, Interim Material on Highway Capacity, Circular 212, 1980.

Unsignalized Intersections

Level of Service	Expected Delay
Α	Little or no delay
В	Short traffic delay
С	Average traffic delays
D	Long traffic delays
Е	Very long traffic delays
F	Extreme delays potentially affecting other traffic movements in the intersection

Represents conditions for individual turning movements at an intersection. Often, one or two Note: movements will have considerable delays while the rest of the intersection operates with

little or no delay.

Source: Transportation Research Board, Highway Capacity Manual, Special Report 209, 1985.

Table C-I.2 Level of Service Criteria for Two-Lane Rural Roads

									V/C R	Ratioa								
			Level 7	errain				F	Rolling	Terrain				Mou	untaino	us Terr	ain	
		Percen	t No-Pa	assing	Zones			Percen	t No-P	assing	Zones			Percen	t No-Pa	assing	Zones	
Level of Service	0	20	40	60	80	100	0	20	40	60	80	100	0	20	40	60	80	100
А	0.15	0.12	0.09	0.07	0.05	0.04	0.15	0.10	0.07	0.05	0.04	0.03	0.14	0.09	0.07	0.04	0.02	0.01
В	0.27	0.24	0.21	0.19	0.17	0.16	0.26	0.23	0.19	0.17	0.15	0.13	0.25	0.20	0.16	0.13	0.12	0.10
С	0.43	0.39	0.36	0.34	0.33	0.32	0.42	0.39	0.35	0.32	0.30	0.28	0.39	0.33	0.28	0.23	0.20	0.16
D	0.64	0.62	0.60	0.59	0.58	0.57	0.62	0.57	0.52	0.48	0.46	0.43	0.58	0.50	0.45	0.40	0.37	0.33
E	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.94	0.92	0.91	0.90	0.90	0.91	0.87	0.84	0.82	0.80	0.78
F	_	_			_	_	oskaman	on-Passan		_	_	_	alignaturally	-		_	***************************************	

^a Ratio of flow rate to an ideal capacity of 2,800 pcph in both directions. Assumed capacity is calculated according to directional split of traffic as shown below:

Directional Split	Total Capacity (pcph)	Ratio of Capacity to Ideal Capacity
50/50	2,800	1.00
60/40	2,650	0.94
70/30	2,500	0.89
80/20	2,300	0.83
90/10	2,100	0.75
100/0	2,000	0.71

Table C-I.3
Level of Service Criteria for Arterial Roadways

Level of Service	Description	V/C Ratio
А	A condition of free flow, with low volumes and high speeds. Traffic density is low, with speeds controlled by driver desire, speed limits, and physical road conditions.	Less than 0.600
В	A condition of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation.	0.600 to 0.699
С	A condition of stable flow, but speed and maneuverability are more adversely affected by higher traffic volumes. Most drivers are restricted in their freedom to select their own speed, change lanes, or pass.	0.700 to 0.799
D	Conditions approach unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions. Fluctuation in volume and temporary restrictions may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.	0.800 to 0.899
E	Represents operation at speeds lower than in Level D, with volumes at or near the capacity of the highway.	0.900 to 0.999
F	Represents forced-flow operations at low speeds, where volumes are below capacity. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of the downstream congestion. In the extreme, both speed and volume can drop to zero.	1,000 and Greater

Table C-I.4
Level of Service Criteria for Freeway Sections

Level of	Description	V/C Ratio
Α	Primarily free-flow operations. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	0.00 to 0.350
В	Reasonably free-flow conditions. The ability to maneuver within the traffic stream is only slightly restricted.	0.351 to 0.540
С	Provides for stable operation, however flows approach the range in which small increases will cause a substantial deterioration in service. Freedom to maneuver within the traffic stream is noticeably restricted.	0.541 to 0.770
D	Borders on unstable flow. Small increases in flow cause substantial deterioration in service. Freedom to maneuver within the traffic stream is severely limited. Minor incidents can be expected to create substantial queuing, as the traffic stream has little space to absorb disruptions.	0.771 to 0.930
E	Operations are extremely unstable. Any incident can be expected to produce a serious breakdown with extensive queuing. Maneuverability within the traffic stream is extremely limited.	0.931 to 1.000
F	Forced or breakdown conditions. Such conditions generally exist within queues forming behind breakdown points.	Greater than 1.00

Source: 1985 Highway Capacity Manual, Table 3-1 for 70 mph design speed.

II. Tri-Valley Model Refinements

SUMMARY OF MODEL REFINEMENTS

Introduction

This summary describes the model refinements completed on the Tri-Valley Transportation Model (TVTM) for use in the Tassajara GPA/EIR. The model refinement consisted of two components: socioeconomic data refinements and network refinements. These components were necessary in order to accurately reflect the development plans of the Tassajara project in the TVTM.

Background

The TVTM, as originally obtained for the Tassajara project analysis, consisted of two EMME/2 databanks: 1990 existing conditions validation model and the 2010 future base model from Dowling Associates. The 2010 future base model provided by Dowling Associates is the same model that was used to analyze the Tassajara Meadow, Wendt Ranch, and Dougherty Valley EIRs, but it is not the same model that was adopted by the TVTC in 1993. The 1990 model provided the basis on which to develop furnessing pivot points and the 2010 future model, ABAG Projections 94' 2010 land use, provided the basic foundation on which to build the refinements needed for the analysis of the project.

Socioeconomic Data Refinements

The original future base model from Dowling Associates contained assumptions on land use that needed to be slightly modified to more accurately reflect the locations of the proposed schools. The schools in Dowling's files were located in TAZ 243 (1,300 students) and TAZ 249 (595 students). According to information obtained from the county for the Tassajara project, school sites are located in TAZ 244 (300 students), TAZ 266 (300 students) and TAZ 269 (300 students).

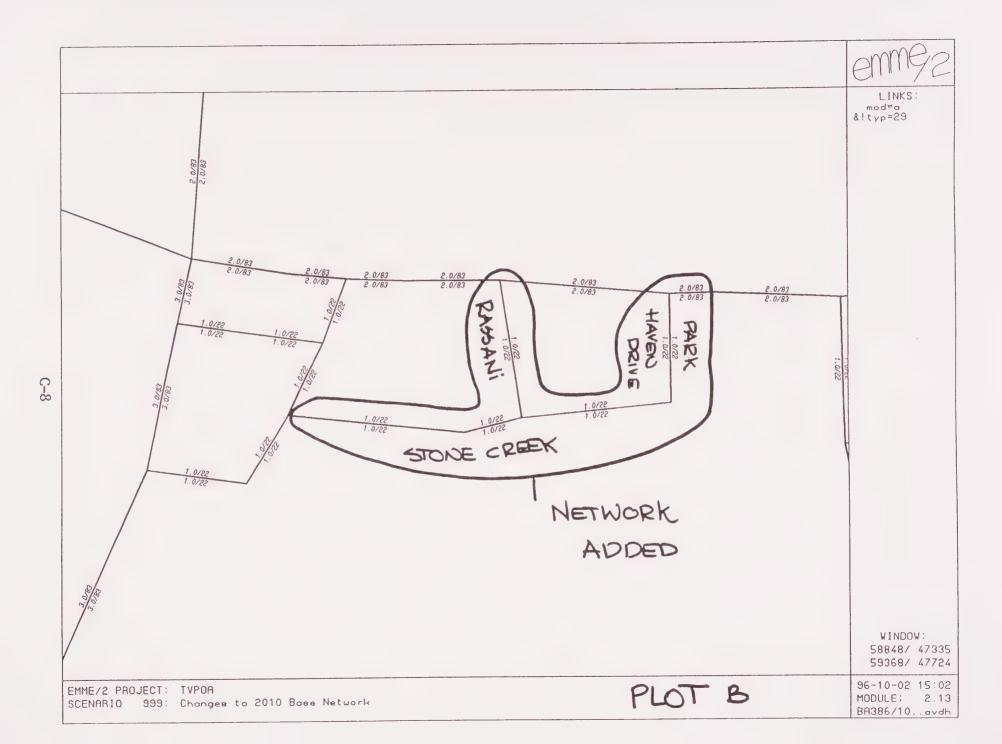
Network Refinements

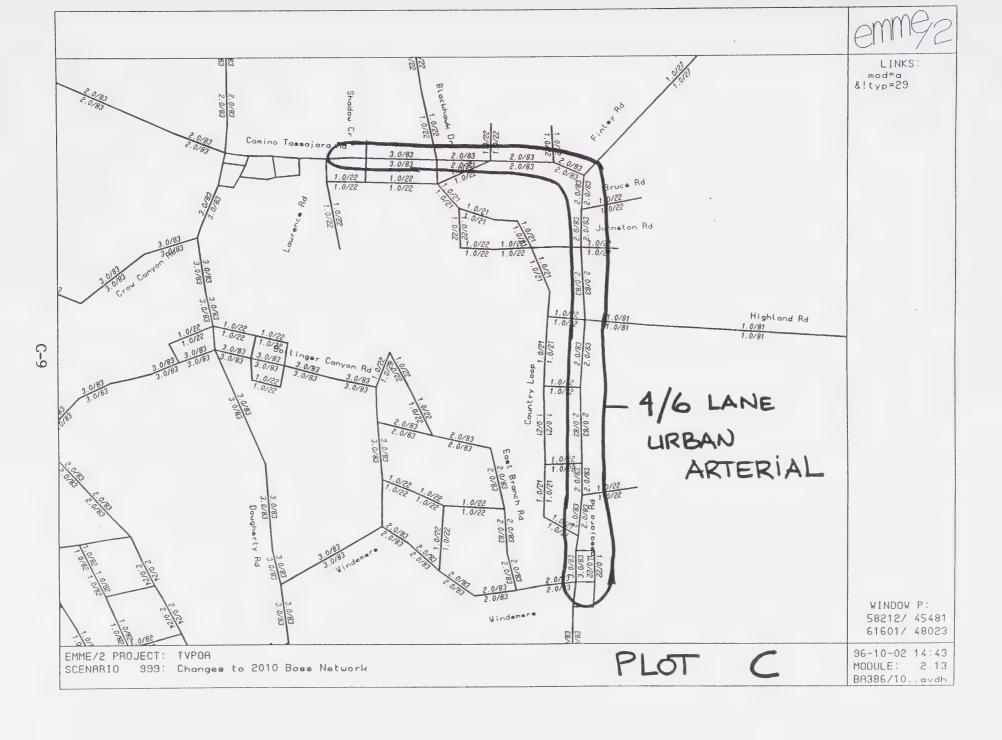
Some network refinements were needed to accurately model the no-build (2010 background) and build (2010 project) scenarios. The following changes were made:

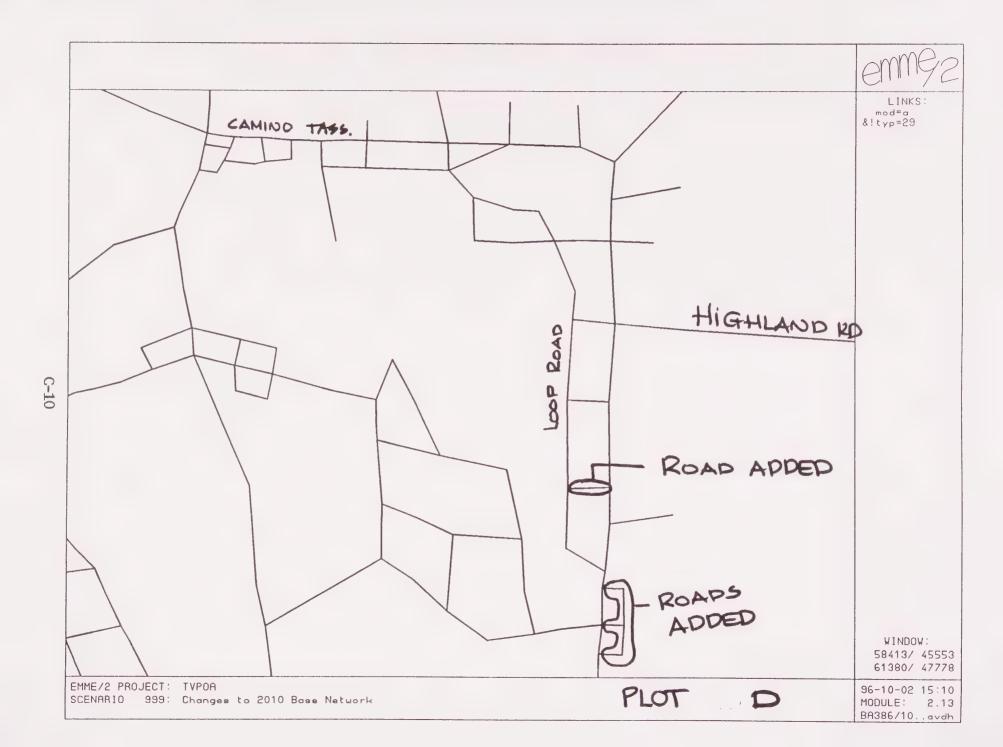
- The coding of Bollinger Canyon Road, east of Alcosta Boulevard, was changed from four lanes to six lanes (Plot A).
- Local roads, east of Tassajara Ranch Drive (i.e., Rassani, Stone Creek, Park Haven Drive) were coded in the 2010 network to better represent the local circulation of traffic east of the Camino Tassajara/Crow Canyon intersection (Plot B).

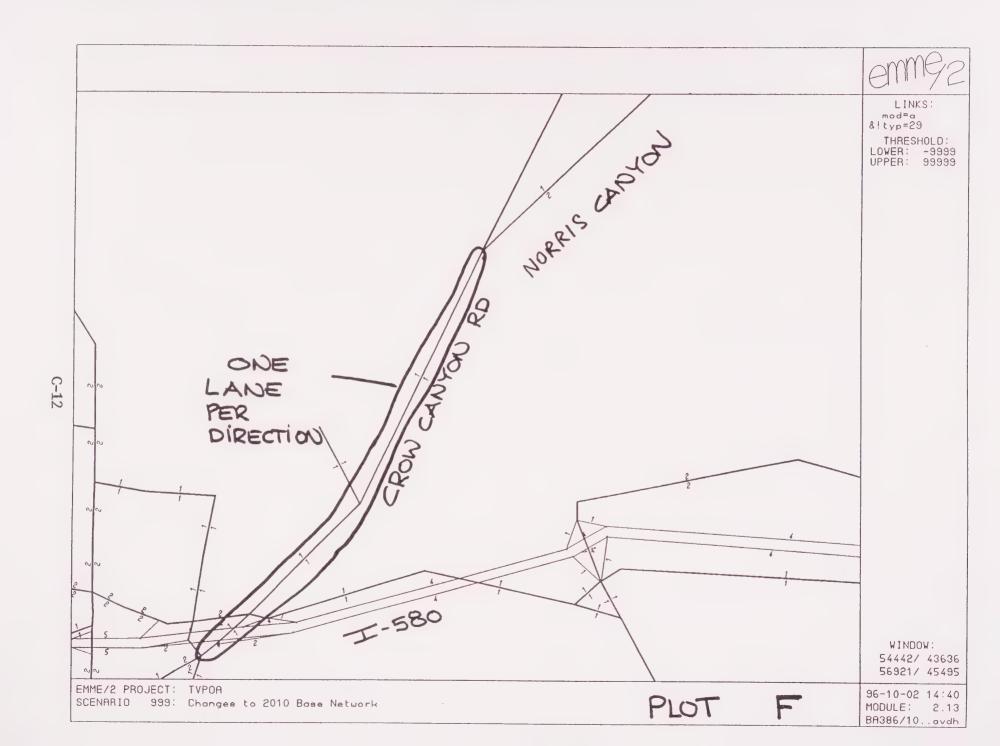
- For the project condition, the coding of Camino Tassajara between Lawrence Road and Windemere was changed from a four-lane rural minor arterial to a four-/six-lane urban major arterial (Plot C).
- The Tassajara project on-site road system was changed to better reflect the internal circulation plan (Plot D).
- The intersection of San Ramon Boulevard and Fostoria Way was coded as an at-grade intersection. The base network assumed a grade separation (Plot E).
- Crow Canyon Road west of Norris Canyon Road (Castro Valley area) was coded as a fourlane facility in the 1990 and 2010 networks. The coding was changed to two lanes since there are no plans to widen this facility beyond two lanes (Plot F).











III. 2010 Background Roadway Network

Table C-III.1

Detailed List of Planned Roadway Improvements

			Cross	-Section (Numb	er of Lanes)	
	From	То	1990	2000	2010	
Caltrans						
1-680	Rudgear Road	Alcosta Boulevard	6	6+2HOV	•	
1-680	Diablo Road	Bollinger Canyon Road	6	6+2HOV	6+2HOV+2 Au	
I-680 at s/o Dublin Boulevard—New IC (hook ramps)			_	Completed		
I-580 at I-680—New SB I-680 to EB 1-580 flyover			IC	Completed	•	
I-580 at I-680—New NB to WB flyover				_	Planned	
Vallecitos Road (Highway 84)	1-680	Isabel Avenue	2 UA	•	4 DA	
I-680 HOV Lanes	Route 84	Sunol Grade	_		Completed	
I-680 HOV Lanes	Alcosta	Route 84		_	Planned	
I-580 HOV Lanes	Tassajara	N. Livermore Avenue	_		Completed	
I-580 HOV Lanes	N. Livermore	County Line		Annuage	Planned	
Dublin						
Dougherty Road	N. City Limit/County Line	Dublin Boulevard	4UA	•	6DA	
Dougherty Road	Dublin Boulevard	I-580	6DA	•	8DA	
Transit Spine	Dublin Boulevard E. of Hacienda	Tassajara Road	-	2	4DA	
Transit Spine	Tassajara Road	Gleason Road	-	-	4DA	
Dublin Boulevard	Donlon Way	San Ramon Road	2DA	4DA	•	
Dublin Boulevard	San Ramon Road	Village Parkway	4DA	6DA		
Dublin Boulevard	Village Parkway	Dougherty Road	4DA	•	6DA	
Dublin Boulevard	Dougherty Road	East City Limit	-	2UA	6DA	
Dublin Boulevard	Eden Canyon Road	End of Existing Dublin Boulevard	-	-	2DA	
I-580/Schaefer Ranch Road Interchange				-	Complete	
Schaefer Ranch Road	I-580	Dublin Boulevard/Hollis Canyon Road		_	4DA	
Hacienda Drive	I-580	Dublin Boulevard	-	4DA	6DA	
Hacienda Drive	Dublin Boulevard	Gleason Drive	-	4DA	4DA	
Gleason Drive	Hacienda Drive	Tassajara Road	_	4DA	4DA	
Gleason Drive	Tassajara Road	Fallon	-	2UA	4DA	
Gleason Drive	Fallon	Dublin Boulevard	-	-	4DA	
San Ramon Road	Vomac Road	Silvergate Drive	2DA	4DA	•	

Table C-III.1
Detailed List of Planned Roadway Improvements (Continued)

		То	Cross-Section (Number of Lanes)		
	From		1990	2000	2010
Tassajara Road	County Line	Gleason Drive	2UA	2UA	6DA
Tassajara Road	Gleason	Dublin Boulevard	2UA	4DA	6DA
Tassajara Road	Dublin Road	I-580	2UA	4DA	6DA
Scarlett Drive	Dougherty Road	Dublin Boulevard	-	-	4DA
_ivermore					
Collier Canyon Road/Airway Boulevard link	Collier Canyon Road	I-580	_	_	4DA
Concannon Boulevard Extension	Arroyo Road	Livermore Avenue	-	2UA	•
Concannon Boulevard Extension	Murdell Lane	Isabel Avenue	•	4DA	•
Dalton Avenue Extension	Vasco Road	Laughlin Road		4DA	•
Dalton Avenue Extension	Laughlin Road	I-580	-	_	4DA
irst Street	Portola Avenue	1-580	2UA	6DA	•
Greenville Road	I-580	Patterson Pass Road	2UA	6DA	•
-580 at First Street—Change interchange			IC	Completed	
-580 at Isabel Avenue—New interchange			-	-	Completed
580 at Greenville RoadNew interchange			IC	Partial	Completed
580 at North Livermore Avenue—Change interchange			IC	•	Completed
580 at Vasco Road—New interchange			IC	•	Completed
580 at Portola Avenue—Remove interchange			IC	•	Removed
ndustrial Way	Preston Avenue	Vasco Road	-	2COL	•
sabel Avenue	1-580	Airway	-/2UA	2UA	8DA
sabel Avenue	Airway	Vineyard		2UA	6DA
sabel Avenue	Vallecitos	Vineyard Avenue	-	2DA	4DA
ack London Parkway	El Charro Road	Kitty Hawk Road	-/2UA	4DA	•
as Positas Road	North Livermore Avenue	First Street	2UA	4DA	•
as Positas Road Extension	Las Positas Road	Vasco Road	-	4DA	•
aughlin Road	Dalton Avenue	Northfront Road	-	2COL	•
lorth Canyon Parkway	Doolan Road	Collier Canyon Road	-/4 DA	•	6DA
North Canyon Parkway	Collier Canyon	Isabel/Cayetano	-	4DA	6DA

Table C-III.1

Detailed List of Planned Roadway Improvements (Continued)

		То	Cross-Section (Number of Lanes)		
	From		1990	2000	2010
orth Mines Road	First Street	North Mines Road		4DA	•
orth Mines Road Extension	Las Positas Road	First Street	-	2COL	
Portola Avenue	Murrieta Boulevard	First Street	2/4UA	4DA	•
Portola Avenue	I-580	North Canyon	-	-	4DA
cenic Avenue Extension	Laughlin	Dalton	2UA	• ,	4DA
asco Road	Scenic	I-580	2UA/2DA	4DA	6DA
asco Road	1-580	Patterson Pass Road	4DA		6DA
asco Road	Scenic	Dalton	2UA	•	4DA
asco Road	Patterson Pass Road	East Avenue	2/4UA	4DA	
lorth Livermore Avenue	1.5 miles N. of 1-580	1-580	2UA	4DA	6DA
orth Livermore Avenue	1.5 miles N. of I-580	Isabel/Cayetano	2UA	•	4DA
abel/Cayetano	I-580	North Canyons Parkway	-	4DA	8DA
abel/Cayetano	North Canyons Parkway	2 miles north of I-580		2UA	6DA
abel/Cayetano	2 miles north of I-580	5 miles north of I-580	-	2UA	4DA
abel/Cayetano	5 miles north of I-580		-	2UA	-
Pleasanton					
Bernal Avenue	Foothill Road	I-680	2UA	4DA	
ernal Avenue E/B	I-680	Koll Center Drive	2DA	6DA	•
ernal Avenue E/B	Koll Center Drive	Valley Avenue	2DA	6DA	•
ernal Avenue E/B	First Street	Stanley Boulevard	2UA	4UA	•
usch Road	Valley Avenue	El Charro Avenue	-	4DA	
Del Valle Parkway	Main Street	Bernal Avenue	-	-	4DA
Oublin Canyon Road W/B	Stoneridge Mall Road	Foothill Road	2UA	3DA	
I Charro Road	1-580	Stoneridge Drive	2UA	4DA	6DA
I Charro Road	Stoneridge Drive	Stanley	-	2UA	4DA
oothill Road N/B	Deodar Way	I-580	3DA	6DA	
oothill Road	Stoneridge Drive	Muirwood Drive North	2UA	4UA	•
lacienda Drive	I-580	Owens Drive	-	6DA	

Table C-III.1
Detailed List of Planned Roadway Improvements (Continued)

		То	Cross-Section (Number of Lanes)		
	From		1990	2000	2010
Hopyard Road	Valley Avenue	Division Street	2/4UA	4DA	
-580 at Foothill Road—Change interchange			IC		Completed
I-580 at Hacienda Drive—New interchange			-	Completed	
l-580 at Santa Rita Road—Change interchange			IC	Completed	6
I-680 at W. Las Positas Boulevard—New interchange				-	Completed
Rosewood Drive	Old Santa Rita Road	Santa Rita Road	4DA	•	6DA
Santa Rita Avenue	I-580	Old Santa Rita Road	4DA	6DA	
Stoneridge Drive	Hopyard Road	Santa Rita Road	4DA	6DA	•
Stoneridge Drive	Santa Rita Road	El Charro Road	-/2 DA/4 DA	4DA	6DA
Sunol Boulevard	First Street	1-680	4UA	•	6DA
Sunol Boulevard	I-680	Castlewood Drive	2UA	•	4DA
/alley Avenue	Bernal Avenue	Sunol Boulevard	-	4DA	•
Vest Las Positas Boulevard	Foothill Road	Payne Road	2UA	•	4DA
West Las Positas Boulevard	Hopyard Road	Stoneridge Drive	4DA	•	6DA
Danville					
Diablo Road	Diablo Road	Green Valley Road	2UA	4UA	•
San Ramon Valley Boulevard	Sycamore Valley Road	Crow Canyon Road	2UA	4UA	•
-680 at Sycamore Valley Boulevard—Change interchange			IC	•	Completed
San Ramon					
Crow Canyon Road	St. George	Tassajara Ranch Drive	4DA	6DA	
Deerwood Place	Fostoria Way Overcrossing	Crow Canyon Road	-	4UA	
ostoria Way Overcrossing	Camino Ramon	Deerwood Place	-	4DA	
680 at Alcosta Boulevard—Remove SB off-ramp			Ramp	•	Removed
I-680 at San Ramon Valley Boulevard (Alcosta Boulevard)—New hook ramp			-	-	Complete
an Ramon Valley Boulevard	Montevideo Drive	Alcosta Boulevard	2DA	4DA	
Vest Side Collector	San Ramon Valley Boulevard	San Ramon Valley Boulevard	-	2COL	
Old Ranch Road	Dougherty Road	Alcosta Boulevard	2UA	4DA	
Bollinger Canyon Road	Alcosta Boulevard	City Limits	4DA	6DA	

Table C-III.1
Detailed List of Planned Roadway Improvements (Continued)

	From	То	Cross-Section (Number of Lanes)		
			1990	2000	2010
Alameda County					
Dublin Boulevard East Extension	Tassajara Road	Doolan Road	-	2DA	6DA
Fallon Road	Tassajara Road	I-580	-/2UA	4DA	6DA
I-580 at Fallon Road—Change interchange			IC	•	Completed
Vasco Road operational improvements	Isabel Avenue	Alameda County Line	_	en-sen	Completed
Crow Canyon Road operational improvements	Alameda County Line	Castro Valley	antender	_	Completed
Contra Costa County					
Bollinger Canyon Road Extension	San Ramon City Limits	Dougherty Road		6DA	•
Bollinger Canyon Road Extension	Dougherty Road North	Dougherty Road South	-	4DA	6DA
East Branch Road	Bollinger Canyon Extension	Windemere Parkway	-	4DA	•
Camino Tassajara	Danville Town Limit	County Line	2UA	2DA	2DA
Dougherty Road	Crow Canyon Road	County Line	2/4UA	4DA	6DA
Windemere Parkway	Bollinger Canyon Extension	Camino Tassajara	_	4DA	•

No change from previous network

DA Divided Arterial

COL Collector

E/B Eastbound

Nonexistent

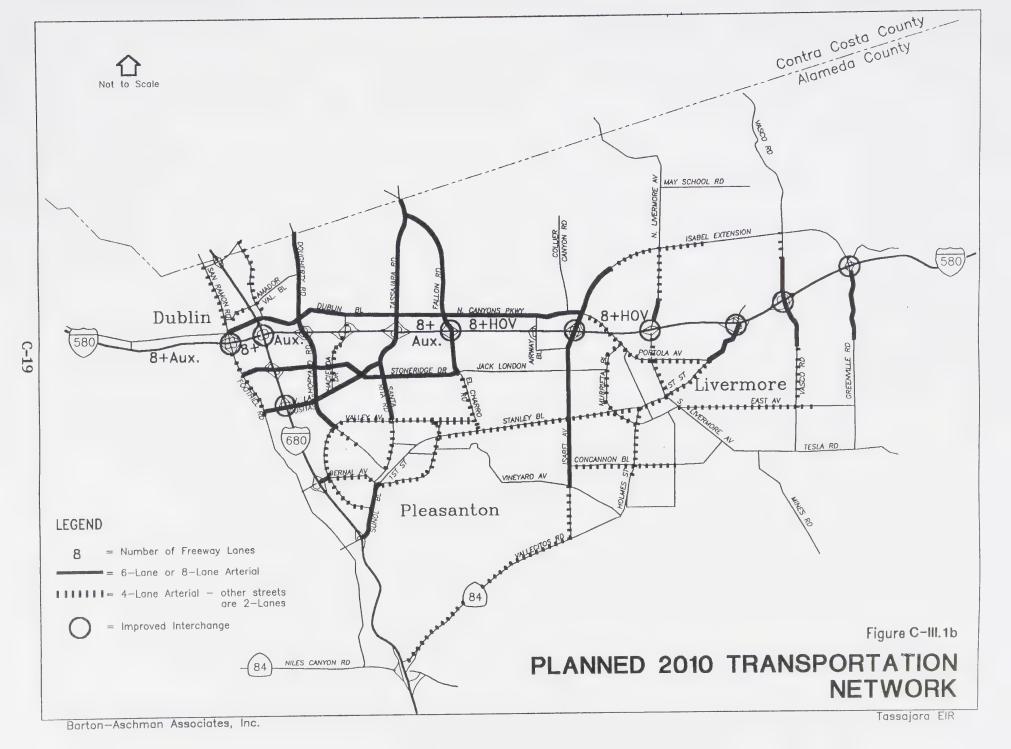
UA Undivided Arterial

IC Interchange

W/B Westbound

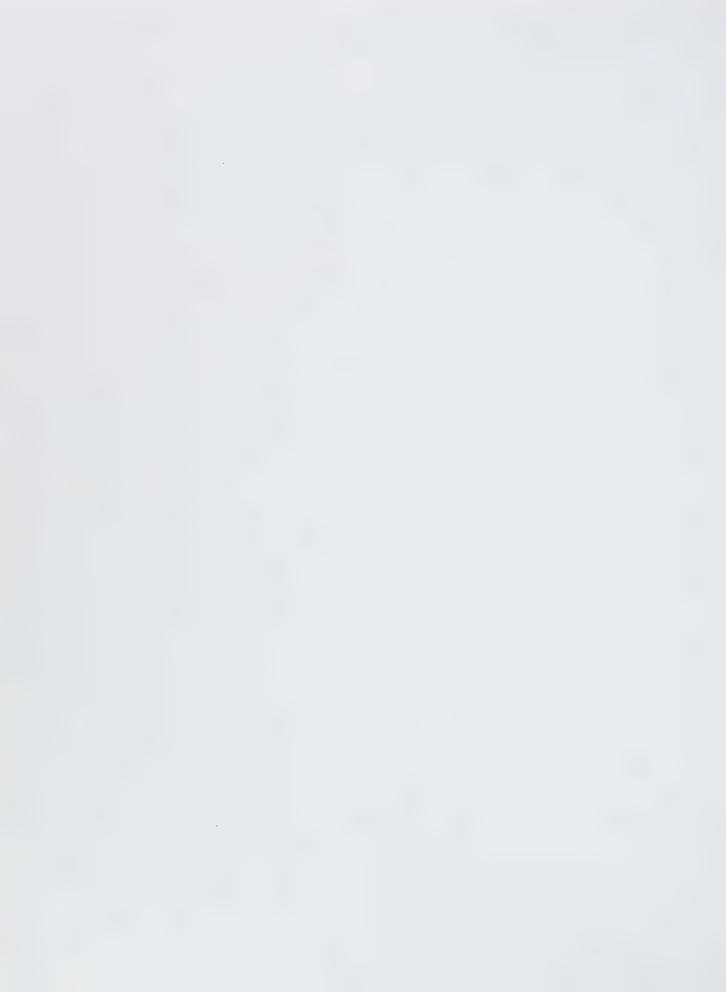
Changes from previous list

Tassajara EIR

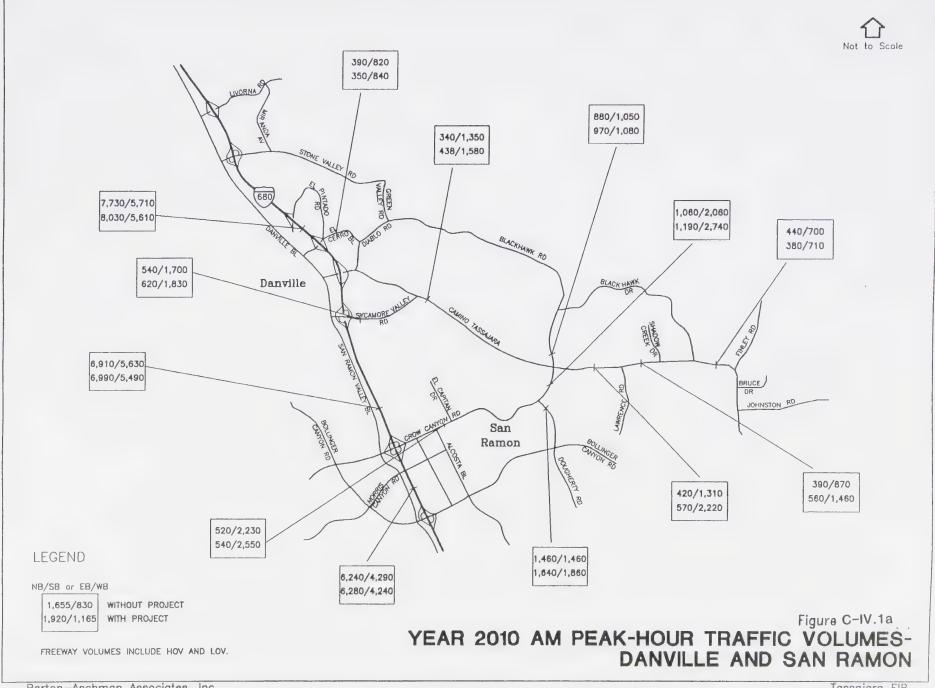


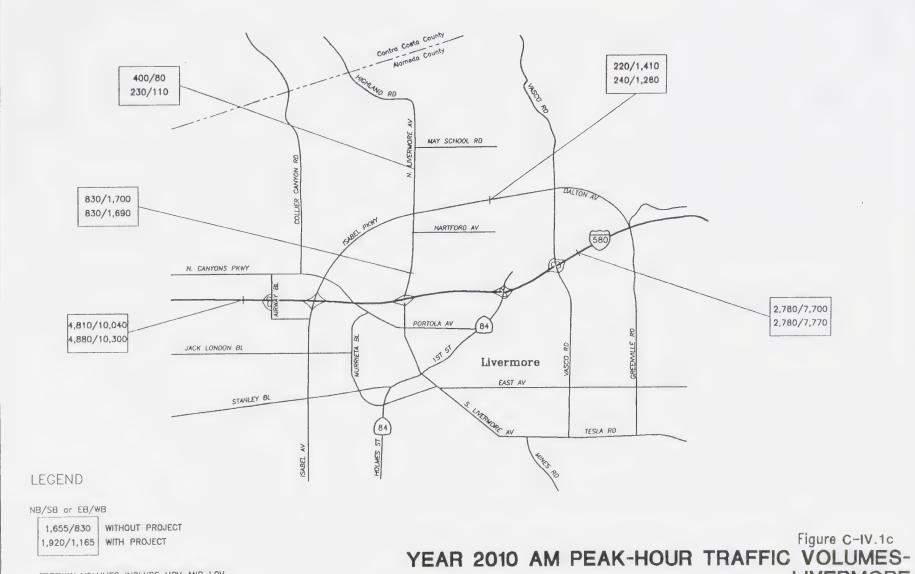
Tassajara EIR

IV. 2010 Background and Project Traffic Volumes









WITH PROJECT

FREEWAY VOLUMES INCLUDE HOV AND LOV.

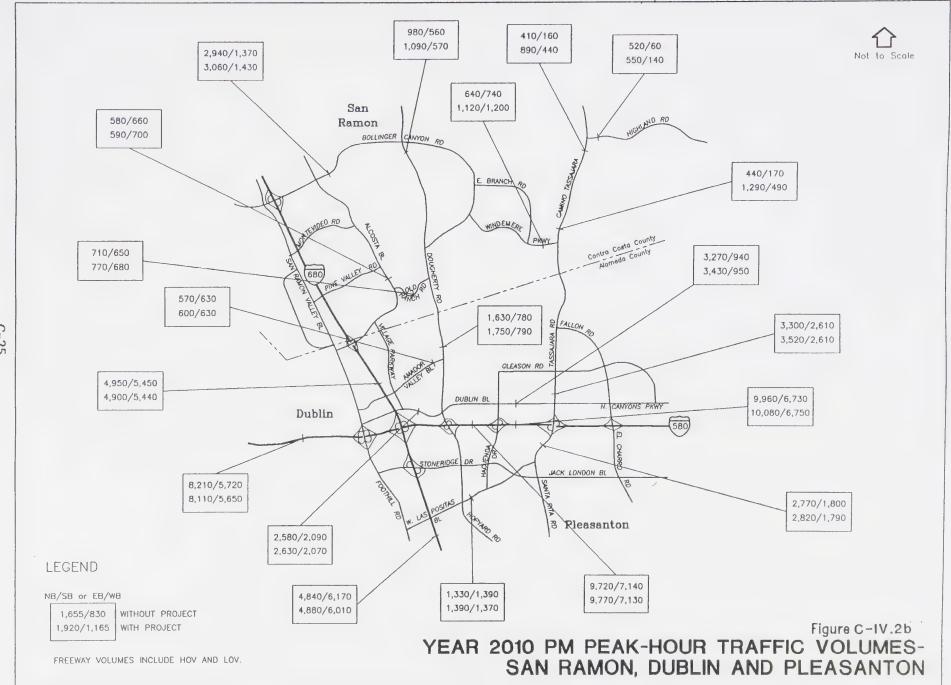
1,920/1,165

Tassajara EIR

LIVERMORE

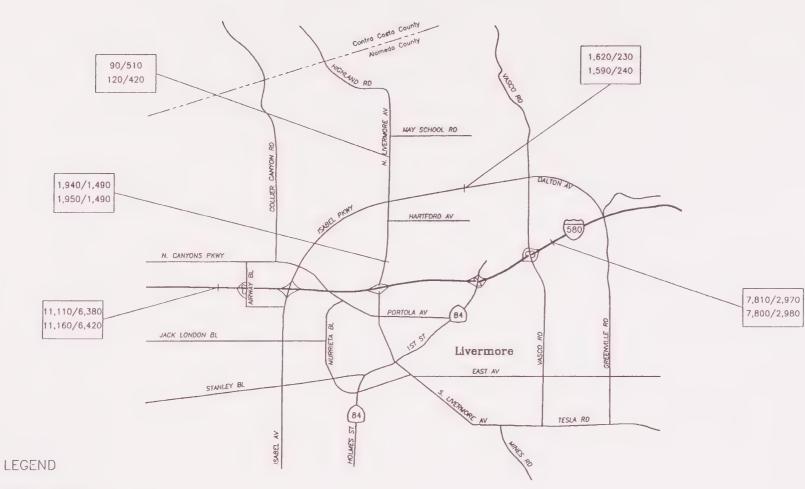
Tassajara EIR











NB/SB or EB/WB

1,655/830 WITHOUT PROJECT 1,920/1,165 WITH PROJECT

FREEWAY VOLUMES INCLUDE HOV AND LOV.

YEAR 2010 PM PEAK-HOUR TRAFFIC VOLUMES-

LIVERMORE

V. Highland Road Operations Analysis



HIGHLAND ROAD ANALYSIS

Highland Road is a two-lane east-west rural road located east of the project site, connecting Camino Tassajara to North Livermore Avenue. Even though Highland Road connects directly to the project site, the rural character of the road and its remote location make questionable its usefulness to project traffic. To ensure that traffic was realistically assigned to Highland Road by the model, a select-link analysis was conducted whereby the origins and destinations of future traffic on Highland Road could be determined. The select-link analysis showed that, without the project, Highland Road would be used primarily as a bypass of I-580 and I-680 between points east of Livermore and north of San Ramon. The analysis also showed that with the project, the non-project trips on Highland road would be displaced by project traffic because the delays along Camino Tassajara would render Highland Road less attractive as a bypass route. Consequently, the total traffic volume on Highland Road would not change appreciably with the addition of the project. The addition of the project would create a somewhat more favorable directional split on Highland Road.

The arterial segment analysis described in the body of the report is based on V/C ratios that are suited to urban and suburban facilities, where operations are largely dictated by traffic controls at intersections. On rural highways, traffic operations are more commonly determined by vehicle speeds and ability to pass slower-moving vehicles. Traffic conditions on the rural section of Highland Road were therefore analyzed using the *Highway Capacity Manual* (HCM) method for analysis of two-lane highways, which is applicable to two-lane rural roads.

The HCM method for analyzing two-lane roadways also correlates level of service with volume-to-capacity ratios, but the V/C scale is much lower than for urban and suburban roadways. The lower V/C scale reflects considerably lower thresholds for acceptable traffic volumes on rural roadways. The HCM method accounts for the unique conditions of Highland Road such as the rolling terrain, the very limited opportunities for passing, and the narrow lane and shoulder widths.

The 2010 traffic projections for background conditions (without the project) show 380 vehicles per hour (vph) westbound and 30 vph eastbound in the AM peak-hour, and 40 vph westbound and 490 vph eastbound in the PM peak hour. The 2010 traffic projections for conditions with the project show 220 vehicles per hour westbound and 50 vph eastbound in the AM peak-hour, and 70 vph westbound and 400 vph eastbound in the PM peak hour. These volumes pertain to the rural segment of Highland Road located east of the project boundary.

The results of the HCM rural roadway analysis show that under 2010 background conditions Highland Road would operate at LOS D, with V/C=0.34, in the AM peak hour, and at LOS D, with V/C=0.44, in the PM peak hour. The results show that under 2010 conditions with the project Highland Road would operate at LOS C, with V/C=0.20, in the AM peak hour, and at LOS D, with V/C=0.37, in the PM peak hour. Note that the V/C ratios are affected not only by the magnitude of the volumes, but also by the directional split of the volumes because the directional split influences the effective capacity of the roadway. The results show that Highland Road would operate at an acceptable LOS D or better both with and without the project. The level of service calculations are included in this Appendix.

VI. Traffic Service Objectives

Traffic Service Objectives

The Tri-Valley Transportation Plan/Action Plan for Routes of Regional Significance, July 1995, identifies several Traffic Service Objectives (TSOs) to guide future development in the area. These TSOs are based on level of service standards for freeway segments and intersections that were agreed by Contra Costa County and Contra Costa cities of the Tri-Valley Area. The Action Plan states that the LOS standard will be a volume-to-capacity ratio of 0.90 (i.e., V/C < 0.90) and will be applied to signalized intersections along the Routes of Regional Significance. For I-680, the standard is LOS E (V/C < 1.00) for no more than four hours in the morning and four hours in the evening.

The TSOs were evaluated against traffic operations on the Contra Costa County Routes of Regional Significance for 2010 conditions without the Tassajara project, 2010 conditions with the Tassajara project, and 2010 conditions without the Tassajara project and mitigation measures. The results of the analysis are shown in Table C-VI.1 for freeway segments and in Table C-VI.2 for intersections.

The evaluation for the freeways indicates that, without the project, the TSO would be violated for the I-680 freeway segment between El Pintado and El Cerro Roads in both the northbound and the southbound directions. With the project, the TSO would be violated for the same segments, although the project would have no impact on the southbound segment. With the project and with the mitigation measures (Mitigation Measure 4.5-1), there would be no violation of the TSOs on any of the freeway segments.

The evaluation for the intersections indicates that, without the project, the TSOs would be violated for two of the intersections. With the project, the TSOs would be violated for six intersections, although the project would impact only five of the six. With the project and with mitigation measures (Mitigation Measure 4.5-3), there would be no violation of intersection TSOs attributable to the project, although the TSO would be violated at Crow Canyon Road and Camino Ramon because of other future projects.

Table C-VI.1

Tassajara GPA EIR

December 19, 1996

Freeway Level of Service on Routes of Regional Significance in Contra Costa County

					Without Project		!mp	Impact With Project					Impact							
			HOV		AM Peak F	lour		PM Peak Ho	ur		Without	Project?	AM Peak H	lour		PM Peak F	lour		With Pr	oject?
Roadway	Segment	Direct	Lanes	Capacity	Volume \	//C	LOS	Volume V/0)	LOS	AM	PM	Volume	V/C	LOS	Volume	V/C	LOS	AM	PM
1-680	El Pintado to El Cerro	NB	Yes	6,600	6,680	1.0	F	6,160	0 93	Е	YES	NO	6,860	1.04	F	6,190	0 94	E	YES	NO
		SB	Yes	6,600	5,100	0.77	7 D	6,910	1 05	F	NO	YES	5,020	0.76	D	6,730	1.02	F	NO	NO
1-680	Sycamore to Crow Canyon	NB	Yes	7,700	6,110	0.79) D	6,070	0.79	D	NO	NO	6,140	0 8 0	Ε	6,020	0.78	D	NO	NO
		SB	Yes	7,700	5,000	0.65	D	6,180	0 80	Ε	NO	NO	4,880	0 63	D	6.050	0 79	D	NO	NO
1-680	Crow Canyon to Bollinger Canyon	NB	Yes	7,700	5,550	0.72	2 D	4,630	0.60	С	NO	NO	5,540	0 72	D	4,620	0.60	С	NO	NO
		SB	Yes	7,700	3,820	0.50) C	5,170	0 67	D	NO	NO	3.790	0 49	С	5.010	0 65	D	NO	NO

Tassajara GPA EIR

December 19 1996

Intersection Level of Service on Routes of Regional Significance in Contra Costa County

			NBAM	NBPM	Impact	BDAM	BDPM	Impa	ct	(Packa	ige A)	(Pack	age B)	(Packa	
				ut Project	Without		Project	With	1	Project With	Mitigations	Project With	h Mitigations	Project With	
			AM Peak	PM Peak	Project?	AM Peak	PM Peak	Proje	ct?	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
	et East/West Street	Location	V/C LOS	V/C LOS	AM PM	V/C LOS	V/C LOS	AM	PM	V/C LOS	V/C LOS	VIC LOS	V/C LOS	V/C LOS	V/C LOS
Node North/South Street		CC County	0.59 A	0 60 B		0 62 B	0.62 B								
1107 Monarch Rd	Bollinger Canyon Bollinger Canyon	CC County	0 79 C	0 65 B		0.83 D	0 67 B								
1111 W. of Monarch	Crow Canyon Rd	San Ramon	0 65 B	0 64 B		0.64 B	0 65 B					i			
1743 I-680 nb off	Crow Canyon Rd	San Ramon	0 95 E	0 75 C	X	0 95 E	0 78 C								
1744 Camino Ramon		San Ramon	0 56 A	0 78 C	1	0 57 A	0 76 C		}						
1760 San Ramon Valle	Crow Canyon Rd	San Ramon	0 60 B	0.58 A		0 64 B	0 60 B								0.00
1776 Alcosta Blvd	Bollinger Canyon	San Ramon	0 78 C	0 90 E	X	079 C	0 92 E		X	0 79 C	0 89 D	0 79 C	0.87 D	0 79 C	0 89 D
1789 Alcosta Blvd		CC County	0 64 B	0 63 B		0 65 B	0 62 B								}
3537 Bollinger Canyon		CC County	0 35 A	0 37 A		0 15 A	0 20 A								
5340 Camino Tassajar		CC County				0 31 A	0 30 A		1						0.00 0
5341 Camino Tassajar		CC County	0 66 B	0 50 A		1 00 F	0 92 E	X	X	0 75 C	0 67 B	0 67 B	0.62 B	0.65 B	0 62 B
5811 Camino Tassajar	Camino Tassajara	CC County	0 29 A	0 40 A		0 63 B	0 52 A								
5901 Blackhawk Dr	Camino Tassajara	CC County				0 21 A	0.24 A	1	1			1			
5919 N Links Rd		CC County	0 41 A	0.51 A		0 43 A	0.54 A					1			
5920 Bollinger Canyor		CC County	0 35 A	0.51 A		0 40 A	0 53 A		1						
5921 Bollinger Canyor 5943 Camino Tassajai		CC County				0 36 A	0 35 A	1							
	*	Danville	0 39 A	0 48 A		0 52 A	0 63 B								
		Danville	0 56 A	0 39 A		0 80 D	0 60 B					1	1		
		CC County	0 66 B	0.85 D		0 73 C	0 89 D								
6366 Dougherty Road 6410 I-680 sb-off	Crow Canyon Rd	San Ramon	0 77 C	0 54 A		0 78 C	0 55 A								
6993 Camino Tassaia		CC County				0 45 A	0 32 A							1	
6994 Camino Tassaja		CC County				0 34 A	0 22 A		1			1			
6995 Camino Tassaja		CC County	0 36 A	0 39 A		0 30 A	C 37 A]						
7091 Crow Canyon Re		Danville	0 48 A	0 51 A		0 63 B	0 64 B				1				
7147 Shadow Creek	Camino Tassajara	CC County	0 33 A	0 25 A		074 C	0 64 B								
8249 San Ramon Vall		Danville	0 45 A	0.73 C		0.47 A	0.74 C	1							
8250 I-680 sb off	Sycamore Valley	Danville	0 43 A	0 50 A		0 43 A	0.53 A		1			1		1	
8251 I-680 nb on	Sycamore Valley	Danville	0 27 A	0 43 A		0 28 A	0 44 A							1	
8252 Camino Tassaja	ra Sycamore Valley	Danville	0 43 A	0 19 A		0 50 A	C.27 A								
8255 I-680 sb off	Bollinger Canyon	San Ramor	0 63 B	0 57 A		0 65 B	0 60 B								
8256 I-680 nb off	Bollinger Canyon	San Ramon	0 47 A	0 70 C		0 44 A	0 73 C			0 89 D	0.85 D	0 89 D	0.78 C	0.82 D	0.78 C
8258 Crow Canyon R	d Camino Tassajara	Danville	0 75 C	0 67 B		0 98 E	0.96 E	×	X	0.89	0 65 0	000	0.70	0.02	0,00
8259 Dougherty Rd	Crow Canyon Rd	San Ramon	0.58 A	0 68 B		0.72 C	0 64 D		ĺ						
8260 Dougherty Rd	Old Ranch Rd	San Ramon	0 64 B	0 50 A		0 71 C	0 55 A								
8265 Camino Tassaja	ira Highland Rd	CC County	0.51 A	0 57 A		0 35 A	0 49 A		1			1			
8363 Gale Ranch Rd	Bollinger Canyon	CC County	0 54 A	0 54 A		0 56 A	0 57 A								
8364 Dougherty Rd	Bollinger (S)	CC County	0 53 A	0 40 A		0 58 A	0 43 A 0 75 C								
8365 Bollinger Canyo	n Windemere Pkwy	CC County	0 53 A	0 60 B		0 70 C	1								
8366 Bollinger Canyo	n N of E Branch	CC County	0 49 A	0 50 A		0 53 A	0 56 A	×		0 87 D	0 79 C	0 87 D	0 78 C	0.89 D	0 80 D
9100 Camino Ramon	Bollinger Canyon	San Ramon	0 89 D	0.76 C		0 91 E	0 79 C	^		001 0	075	001 0	0,00	1 000	
9126 Finley Rd	Camino Tassajara	CC County	0 38 A	0 40 A		0 16 A	0 21 A								
9129 N Village Cente	r Camino Tassajara	CC County				0 31 A	0 33 A								
9150 Diablo Blvd	Camino Tassajara	Danville	040 A	0 32 A		0 43 A	0 31 A								
9198 I-680 sb off	Diablo Rd	Danville	051 A	0 34 A		0 52 A	0 34 A								
9204 I-680 nb off	Diablo Rd	Danville	0 33 A	0 38 A		0 34 A	0 38 A		×	0.86 D	0.61 B	0 86 D	0.59 A	0.87 D	0 60 B
9340 Sunset Drive	Bollinger Can	San Ramon	0 87 D	0 89 D		0 86 D	00		X	0 00 0	001 8	000 0	0.35 A	00,	000
9344 Crow Canyon F	laz Crow Canyon Rd	San Ramon	0 60 B	0.81 D		0 60 B	0 82 D								
9349 Lawrence Rd	Camino Tassajara	CC County	0 37 A	071 C		0 63 B	0 67 B								
9355 Brookside	Sycamore Valley	Danville	0 55 A	0 31 A		0 61 B	C 35 A								
9357 San Ramon Va	lley Railroad Ave	Danville	0 43 A	0 56 A		0 44 A	0 56 A 0 67 B								
9414 El Capitan Dr	Crow Canyon Rd	San Ramor	074 C	0 67 B		0.79 C	1 00/ B		-						

VII. Contra Costa County Congestion Management Program

CONTRA COSTA CONGESTION MANAGEMENT PROGRAM

The 1995 Contra Costa Congestion Management Program Update identified I-680 as the only CMP road in the Contra Costa County project study area, with the following designated LOS standards for the I-680 segments:

- LOS F, south-bound from El Cerro Boulevard to Bollinger Road;
- LOS E, south-bound from Bollinger Canyon Road to Alameda County Line; and
- LOS E, north-bound from Alameda County Line to El Cerro Boulevard.

The CMP stipulates that if the above LOS standards are violated, as a result of project traffic impact analysis, the mitigation measures are required to be identified, along with the associated implementation costs of the mitigation measures.

The traffic analysis conducted for this EIR indicated that the project traffic had not violated the CMP LOS standards above. The table below summarizes the LOS on the I-680 segments in Contra Costa County without and with project conditions for the year 2010.

LOS UNDER 2010 CONDITIONS

		LOS w/o Project		LOS	w/Project
I-680 SEGMENT	DIRECTION	<u>AM</u>	<u>PM</u>	<u>AM</u>	<u>PM</u>
El Pintado-	NB	F	E	F	E
El Cerro	SB	D	F	D	F
Sycamore-	NB	D	D	E	D
Crow Canyon	SB	D	E	D	D
Crow Canyon-	NB	D	C	D	C
Bollinger Canyon	SB	D	D	C	D
Alcosta-	NB	C	D	E	D
Alameda County Line	SB	E	D	C	E

VIII. Tassajara Ranch Drive Analysis



TASSAJARA RANCH DRIVE ANALYSIS

Presented here is an evaluation of traffic operations in the area of Tassajara Ranch Drive in Eastern Danville. The evaluation represents a focused analysis of year 2010 conditions in the vicinity of the intersection at Camino Tassajara and Crow Canyon Road.

Tassajara Ranch Drive Area Roadway System

The Tassajara Ranch Drive study area is shown on Figure C-VIII.1. The principal roadways in the area are Crow Canyon Road, a six-lane arterial, and Camino Tassajara, a four-lane arterial that in some locations is five or six lanes wide. Secondary roadways of interest in this analysis include Tassajara Ranch Drive, Center Way, and Blackstone/Mountain Ridge Drive.

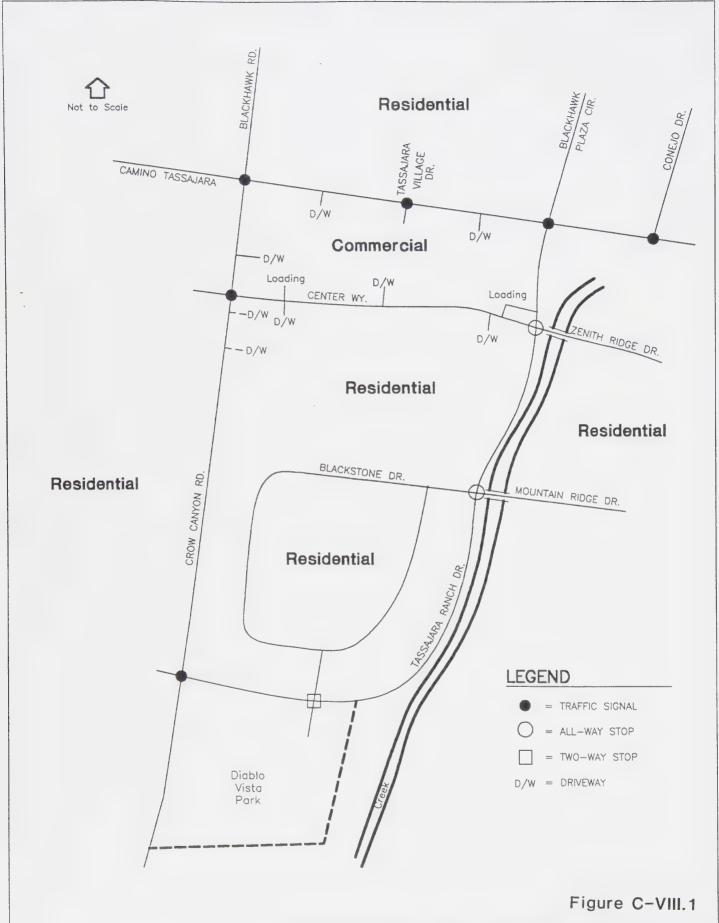
Tassajara Ranch Drive is a two-lane collector with approximate 45-foot curb-to-curb width, a 15-foot raised and landscaped median, and 4-foot sidewalks on one or both sides. It connects Crow Canyon Road at its southwest point, runs eastward past Diablo Vista Park, curves northward along the west side of the creek and ultimately connects to Camino Tassajara at its northern end. North of this intersection the road continues as Blackhawk Plaza Circle.

The north and west sides of Tassajara Ranch Drive are bordered by a six-foot-high wall that surrounds the adjacent residential development. Most of the east side of Tassajara Ranch Drive is bordered by the creek. Parking is prohibited on both sides of Tassajara Ranch Drive.

Center Way is a two-lane local street with approximate 35-foot curb-to-curb width and sidewalks on both sides. It connects Crow Canyon Road at the west to Tassajara Ranch Drive at the east. Adjacent land uses are commercial, principally retail, on the north side and medium-density residential on the south side. Parking is permitted on the south side of the street.

Blackstone Drive is a two-lane residential street that intersects Tassajara Ranch Drive from the west and continues eastward as Mountain Ridge Drive. Parking is permitted on both sides of the street.

Figure C-VIII.1 shows the intersections in the area and the types of traffic control at each. Also shown are the access locations including driveways to the shopping center and the truck loading areas. The driveways along Crow Canyon Road and Camino Tassajara are right-turn-only driveways. The driveways on Center Way are full-access driveways. Not all of the intersections and access points are analyzed in this study, but they are shown on the diagram as an inventory of traffic-related features.



TASSAJARA RANCH DRIVE AREA

Bicycle lanes are provided on both sides of Crow Canyon Road and in the eastbound direction on Camino Tassajara. Transit service is provided by the Central Contra Costa Transit Authority's County Connection bus service. Route 221 bus stops are located on the north side of Camino Tassajara west of Tassajara Ranch Drive/Blackhawk Plaza Circle and on the south side of Camino Tassajara west of Tassajara Village Drive.

Tassajara Ranch Drive Area Land Uses

The land uses in the area are shown on Figure C-VIII.1. The area is predominantly residential, with a shopping center and a public park. The shopping center, designated as commercial on the diagram, is bounded by Camino Tassajara on the north, Tassajara Ranch Drive on the east, Center Way on the south, and Crow Canyon Road on the west. Diablo Vista Park is located south of Tassajara Ranch Drive, east of Crow Canyon Road, and west of the creek.

Transportation Model

The traffic volumes used in this analysis are from the same forecasts produced by the Tri Valley Transportation Model for use in the EIR under the 2010 conditions with and without the Tassajara project. It is recognized that the forecasted levels of congestion at the intersection of Camino Tassajara and Crow Canyon Road could adversely affect traffic conditions on Tassajara Ranch Drive. Because of the high demand for movements from westbound to southbound in the AM peak period and from northbound to eastbound in the PM peak period, it had been anticipated that some traffic could divert to Tassajara Ranch Drive to escape the congestion at the intersection of Camino Tassajara and Crow Canyon Road. In order to quantify any potential diversion of traffic to Tassajara Ranch Drive, traffic forecasts were produced for two scenarios—one in which cut-through traffic assignments were prevented, and one in which they were allowed.

The first set of forecasts were based on the imposition of turning restrictions at the intersection of Camino Tassajara and Tassajara Ranch Drive. The turn restrictions reflect actual turn prohibitions that would be in place to prevent cut-through traffic on Tassajara Ranch Drive. The prohibited movements are the westbound left turn from Camino Tassajara onto Tassajara Ranch Drive during the AM peak period and the northbound right turn from Tassajara Ranch Drive onto Camino Tassajara during the PM peak period. These turn prohibitions would be implemented with signage at the intersection. The forecasts are based on presumed compliance with these restrictions.

Forecasts were also produced for a scenario with no turning restrictions at any of the intersections in the Tassajara Ranch Drive area. In this scenario the model would assign traffic strictly on the basis of demand.

The model produced forecasts for both scenarios and showed no appreciable (fewer than 10 peak-hour vehicles) difference in traffic assignments at intersections in the area. From this it can be concluded that Tassajara Ranch Drive, in its existing configuration as a low-speed two-lane collector street, would not attract non-local traffic and would thus not be subject to worsening traffic conditions from diverted traffic.

Analysis Approach

The analysis consists of level of service analysis for six intersections, vehicle queuing analysis for two intersections, and a qualitative evaluation of impacts for two intersections. These are described in the sections below.

Tassajara Ranch Drive Area Intersection Level of Service Analysis

Year 2010 peak-hour traffic conditions were analyzed using intersection level of service for the following intersections:

- Crow Canyon Road and Camino Tassajara
- Crow Canyon Road and Center Way
- Crow Canyon Road and Tassajara Ranch Drive
- Tassajara Ranch Drive/Blackhawk Plaza Circle and Camino Tassajara
- Tassajara Ranch Drive and Center Way
- Tassajara Ranch Drive and Blackstone Drive

Operations at each intersection were analyzed under AM and PM peak-hour conditions both with and without the Tassajara project. The first four intersections are signalized and were analyzed using the CCTA's VCCC level of service methodology for signalized intersections. The latter two intersections, at which it is assumed that four-way stop control will remain, were analyzed using the Transportation Research Board (TRB) Circular 373 methodology for all-way stops.

The results are summarized in Table C-VIII.1. The results show that without the project all six intersections would operate at LOS C or better.

TABLE C-VIII.1
TASSAJARA RANCH DRIVE AREA INTERSECTION LEVELS OF SERVICE

		Year Without		Year 2010 With Project		
Intersection	Period	V/C	LOS	V/C	LOS	
Signalized Intersections ¹						
Crow Canyon/Camino Tassajara	AM	0.75	C	0.98	E	
	PM	0.67	В	0.96	E	
Crow Canyon/Center	AM	0.43	Α	0.58	A	
	PM	0.48	A	0.63	В	
Crow Canyon/Tassajara Ranch	AM	0.52	Α	0.68	В	
	PM	0.52	A	0.64	В	
Tassajara Ranch/Camino Tassajara	AM	0.56	A	0.79	С	
	PM	0.34	A	0.55	Α	
Committee of the second	Period	Delay	LOS	Delay	LOS	
Unsignalized Intersections ²						
Tassajara Ranch/Center	AM	1.0	Α	1.0	Α	
	PM	1.0	A	2.0	Α	
Tassajara Ranch/Blackstone	AM	2.0	A	5.0	В	
	PM	2.0	Α	3.0	A	

¹ LOS based on the CCTA's VCC method for signalized intersections.

² LOS based on TRB Circular 373 method for all-way stops.

Impact C-VIII.1 The Tassajara development would significantly affect level of service at the intersection of Crow Canyon Road and Camino Tassajara.

Under conditions with the project, the intersection of Crow Canyon Road and Camino Tassajara would operate at an unsatisfactory LOS E during both of the peak hours.

Mitigation Measure

C-VIII.1 Refer to body of report, mitigation measure 4.5-3A-7.

The other five intersections would operate at an acceptable LOS C or better during the peak hours. The VCCC level of service calculation sheets are included in this Appendix.

Tassajara Ranch Drive Area 2010 Queuing Operations

Significance Criteria for Vehicle Queuing. Project traffic is said to have a significant impact on intersection operations if the addition of project traffic causes the 15-minute peak-period average vehicle queue length to exceed the vehicle storage capacity for a particular movement.

The purpose of the queuing analysis is to evaluate traffic operations for the high-demand movement from westbound Camino Tassajara to southbound Crow Canyon Road in the AM peak hour and from northbound Crow Canyon Road to eastbound Camino Tassajara in the PM peak hour. The CAPSSI intersection level of service methodology, which is an operations and planning application of the *Highway Capacity Manual*, was used to estimate the length of northbound vehicle queues on Crow Canyon Road south of Camino Tassajara and westbound vehicle queues on Camino Tassajara east of Crow Canyon Road. The vehicle queuing was analyzed under year 2010 AM and PM peak-hour conditions both with and without the Tassajara project. The CAPSSI level of service calculations are included in this Appendix.

The queuing analysis compares expected vehicle queue lengths, based on projected traffic volumes, to existing available storage at the intersections. Based on intersection geometry, volumes, and signal phasing, CAPSSI estimates the average queue, in vehicles per lane, for each signal phase. With the volumes expressed in terms of peak 15-minute flow rates, the average queue for each movement during the peak 15-minute period is generated directly by CAPSSI. The average queues are translated into average queue lengths by assuming 25 linear feet per vehicle in a standing queue. The adequacy of storage is based on the queue length being less than the storage length. If the queue length is less than the available storage length, then vehicle queues would not impede upstream traffic operations. The intersection lane geometrics and storage capacity for northbound Crow Canyon Road and westbound Camino Tassajara are illustrated on Figure C-VIII.2.

Table C-VIII.2 shows a comparison of the estimated future vehicle queue lengths to the vehicle storage capacity available for the critical lane groups.





Figure C-VIII.2

VEHICLE STORAGE CAPACITY AT CROW CANYON/ CAMINO TASSAJARA INTERSECTION

TABLE C-VIII.2
VEHICLE QUEUING AT CROW CANYON/CAMINO TASSAJARA INTERSECTION

		P	eak-Hour Vehicle	Queue Le	ngth	
	Vehicle		2010 out Project	2010 With Project		
Intersection	Storage	AM	PM	AM	PM	
NB Crow Canyon to EB Camino T	assajara					
NB through at Center	1400	100	175	100	225	
NB through at Camino Tassajara	520	175	175	250	325	
NB right at Camino Tassajara 1	520	175	175	250	375	
WB Camino Tassajara to Southboo	und Crow Canyon					
WB left at Crow Canyon	310	225	150	475	275	
WB through at Crow Canyon	500	100	50	150	100	
SB through at Center	520	175	100	225	125	

Note: Vehicle storage and queues are measured in feet per lane for each movement. Lane storage lengths pertain to distances from intersection stop bar to first full-access intersection located upstream.

Impact C-VIII.2 The Tassajara development would significantly affect queue operations on the westbound approach of the intersection at Camino Tassajara and Crow Canyon Road.

Westbound Camino Tassajara to Southbound Crow Canyon Road

Without the project, the estimated average vehicle queue length would be less than the available storage capacity for all three critical lane groups on westbound Camino Tassajara (westbound left at Crow Canyon, westbound through at Crow Canyon, and southbound through at Center) during both peak periods.

Under project conditions, the estimated average vehicle queue length would exceed the available storage capacity for the westbound left-turn lane group in the AM peak 15-minute period. The shortage of storage capacity for westbound left-turning vehicles would create a temporary spillback of vehicles onto the adjacent westbound through lane. The estimated average AM peak period queue of 475 feet for left-turn vehicles would extend out of the turn pocket and into the adjacent through lane. The westbound queue is not, however, expected to spill back into the intersection at Tassajara Village Drive.

Mitigation Measure

C-VIII.2

Extend the existing westbound left-turn pockets from 310 feet to 475 feet. This improvement would require cutting into the existing median, removing landscaping within the median, and paving over a distance of approximately 165 feet.

¹ Assumes right-turn-on-red to be permissible from exclusive right-turn lane.

Northbound Crow Canyon Road to Eastbound Camino Tassajara

The results show that, both with and without the project and during both peak periods, the estimated average vehicle queue length would be less than the available storage capacity for all three critical lane groups on northbound Crow Canyon Road (northbound through at Center, northbound through at Camino Tassajara, northbound right-turn at Camino Tassajara).

Northbound right-turn lane south of Camino Tassajara

The shopping center driveway is located 275 feet south of the stop line, such that right turns into and out of the driveway would be impeded by a queue of stopped vehicles that is greater than 275 feet. Estimates of peak period queue lengths show that this would not occur under conditions without the project, but would occur briefly during the PM peak 15-minute period with the project. This is considered a less-than-significant impact.

Local Traffic Issues

In response to concerns expressed by the Town of Danville staff, a qualitative analysis of traffic conditions on Tassajara Ranch Drive was conducted to determine the extent of project traffic impacting local conditions.

Tassajara Ranch Drive at Center Way

According to Danville staff, this intersection is starting to be affected by existing traffic cutting through on Tassajara Ranch Drive to avoid the Crow Canyon/Camino Tassajara intersection. In response to citizen complaints, the Town of Danville intends to install signs prohibiting cut-through traffic during peak hours. The signs will disallow left turns from Camino Tassajara onto Tassajara Ranch Drive in the morning and disallow the opposite movement (right turns from Tassajara Ranch Drive onto Camino Tassajara) in the evening.

Thus, the project is expected to have no impact on Tassajara Ranch Drive or the Tassajara Ranch/Center Way intersection. The volume on Tassajara Ranch Drive was counted at about 2,200 cars per day in January 1995. This volume can be easily accommodated within the existing street cross-section and is well within the normal range for a residential collector street. Note in Table C-VIII.1 that the Tassajara Ranch Drive/Center Way intersection is expected to operate at LOS A during both peak hours both with and without the project.

Tassajara Ranch Drive and Crow Canyon Road (Diablo Vista Park)

As has been described above, the proposed Town of Danville turn restrictions will prevent increases in non-local traffic all along Tassajara Ranch Drive, including in front of the park. The Project will not have any impact at this location. The volume on Tassajara Ranch Drive (as of January 1995) is well within acceptable limits for the type of street that it is, a residential collector, and does not pose an undue hazard to pedestrians or cyclists. Adequate sidewalks are provided, and the street pavement width is sufficient for bicycles.

FACILITY LOCATION.... Highland Road

ANALYST..... SFH
TIME OF ANALYSIS.... AM

DATE OF ANALYSIS.... 09-27-1996

OTHER INFORMATION.... 2010 Background

A) ADJUSTMENT FACTORS

B) CORRECTION FACTORS

ROLLING TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	4	3	3.2	.7	.74	.87
В	5	3.4	3.9	.7	.74	.83
С	5	3.4	3.9	.7	.74	.83
D	5	2.9	3.3	.7	.74	.83
Ε	5	2.9	3.3	. 85	.74	.83

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 411
ACTUAL FLOW RATE: 411

SERVICE LOS FLOW RATE V/C _____ .04 Α 50 В 181 .15 С 362 . 3 D 554 .46 Ε 1317 .9

$$V/C = \frac{411}{1204} = 0.34$$

LOS FOR GIVEN CONDITIONS: D

FACILITY LOCATION ... Highland Road

ANALYST..... SFH
TIME OF ANALYSIS.... PM

DATE OF ANALYSIS.... 09-27-1996

OTHER INFORMATION.... 2010 Background

A) ADJUSTMENT FACTORS

B) CORRECTION FACTORS

ROLLING TERRAIN

	E	E	Ε	f	f	f
LOS	Т	В	R	W	d	HV
Α	4	3	3.2	.7	.74	.87
В	5	3.4	3.9	. 7	.74	.83
С	5	3.4	3.9	.7	.74	.83
D	5	2.9	3.3	.7	.74	.83
E	5	2.9	3.3	. 85	.74	.83

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 535
ACTUAL FLOW RATE: 535
SERVICE

1324

E

$$V/C = \frac{535}{1211} = 0.44$$

LOS FOR GIVEN CONDITIONS: D

. 9

FACILITY LOCATION ... Highland Road

ANALYST..... SFH TIME OF ANALYSIS.... AM

DATE OF ANALYSIS.... 09-27-1996 OTHER INFORMATION... 2010 Project

A) ADJUSTMENT FACTORS

B) CORRECTION FACTORS

ROLLING TERRAIN

LOS	E T	E B	E R	f W	f d	f HV	
Α	4	3	3.2	. 7	.82	.87	
В	5	3.4	3.9	.7	.82	.83	
С	5	3.4	3.9	.7	.82	.83	
D	5	2.9	3.3	.7	.82	.83	
Ε	5	2.9	3.3	.85	. 82	.83	

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 272 ACTUAL FLOW RATE: 272 SERVICE

$$C = \frac{403}{3} = \frac{1343}{1343}$$

$$V/c = \frac{272}{1343} = 0.20$$

LOS FOR GIVEN CONDITIONS: C

FACILITY LOCATION.... Highland Road

ANALYST..... SFH
TIME OF ANALYSIS.... PM

DATE OF ANALYSIS.... 09-27-1996 OTHER INFORMATION... 2010 Project

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS. 5
PERCENTAGE OF BUSES. 0
PERCENTAGE OF RECREATIONAL VEHICLES. 0
DESIGN SPEED (MPH). 40
PEAK HOUR FACTOR. 1
DIRECTIONAL DISTRIBUTION (UP/DOWN). 86 / 14
LANE WIDTH (FT). 11
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.) 1
PERCENT NO PASSING ZONES. 90

B) CORRECTION FACTORS

ROLLING TERRAIN

LOS	E T	B E	E R	f	f d	f HV
A	4	3	3.2	.7	.78	.87
В	5	3.4	3.9	.7	.78	.83
С	5	3.4	3.9	.7	.78	.83
D	5	2.9	3.3	.7	.78	.83
E	5	2.9	3.3	. 85	.78	.83

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 468
ACTUAL FLOW RATE: 468
SERVICE
LOS FLOW RATE V/C

A 53 .04
B 192 .15
C 383 .3
D 588 .46

1395

$$C = \frac{588}{.46} = \frac{1278}{1278}$$

$$V/C = \frac{468}{1278} = 0.37$$

. 9

CCTA	LOS Softw	are ver.	2.35	by TJ	JKM Tr	ansportat	ion Consul	tants
==== Cond	====== ition: 20	====== 10 No Pr	===== oject	====== - AM	===== Peak	=======	=======	08/21/96
INTE				nyon F		enter Way		======================================
CCTA	METHOD	R		THRU I		^		3-PHASE SIGNAL
LEFT							lit? N O RIGH	STREET NAME:
THRU RIGH	T 9	- 1 1	1 0		1 0		2 THRU 46 LEFT	Center Way
N W + S				1145 THRU I		Split? N		SIG WARRANTS: Urb=N, Rur=N
====		STREET	NAME	E: Crov	w Cany	yon Rd.	=======	=======================================
Ĭ.	MOVEMENT	ORIGIN VOLUM				CAPACITY	,	CRITICAL V/C
NB	RIGHT (R) THRU (T) LEFT (L)	1145		1149	5	1720 5160 1720	0.0029 0.2219 0.0099	0.0099
SB	RIGHT (R) THRU (T) LEFT (L)	30 2011 0		201	0 *	1720 5160 1720	0.0000 0.3897 0.0000	0.3897
EB	RIGHT (R) THRU (T) LEFT (L) T + R	9 2 53	2		9 2 3	1720 1720 1720 1720	0.0052 0.0012 0.0308 0.0064	0.0064
WB	RIGHT (R) THRU (T) LEFT (L) T + R	0 2 46)	4	0 2 6 2	1720 1720 1720 1720	0.0000 0.0012 0.0267 0.0012	0.0267
===:	TOTAL VO	LUME-TO- CTION LEV	CAPAC	CITY R	ATIO:	=======	========	0.43 A

* ADJUSTED FOR RIGHT TURN ON RED
INT=TASSNB.INT, VOL=NBADJ.AMV, CAP=

CCTALOS Software ver.	2.35 by TJKM Tra	ansportation Consulta	ants
Condition: 2010 No Pr	oject - AM Peak	=======================================	08/21/96
INTERSECTION 6007 Ta		mino Tassajara Danvi Peak Hou	
^	RIGHT THRU LEFT 28 1 9	^	3-PHASE SIGNAL
LEFT 93 1.0 THRU 435> 3.1		1.1 30 RIGHT	STREET NAME: Camino Tassajara
RIGHT 15 1.1 .	1.0 1.1 1.1 <>	1.0 0 LEFT v Split? N	SIG WARRANTS: Urb=N, Rur=N

STREET NAME: Tassajara Ranch

===	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R) THRU (T) LEFT (L) T + R	16 2 66	16 2 66 18	1720 1720 1720 1720	0.0093 0.0012 0.0384 0.0105	0.0384
SB	RIGHT (R) THRU (T) LEFT (L)	28 1 9	0 * 1 9	1720 1720 1720	0.0000 0.0006 0.0052	0.0006
EB	RIGHT (R) THRU (T) LEFT (L) T + R	15 435 93	15 435 93 450	1720 5160 1720 5160	0.0087 0.0843 0.0541 0.0872	0.0541
WB	RIGHT (R) THRU (T) LEFT (L) T + R	30 1590 0	30 1590 0 1620	1720 3440 1720 3440	0.0174 0.4622 0.0000 0.4709	0.4709
===		LUME-TO-CAPA	ACITY RATIO: OF SERVICE:	=======================================	=======================================	0.56 A

* ADJUSTED FOR RIGHT TURN ON RED INT=TASSNB.INT, VOL=NBADJ.AMV, CAP=

CCTALOS Software ver	2.35 by TJKM Transportation C	onsultants
Condition: 2010 No P	Project - AM Peak	08/21/96
INTERSECTION 7091 C	Crow Canyon Rd./Tassajara Ranch Time Pe	
^	RIGHT THRU LEFT 0 2065 0	3-PHASE SIGNAL
	< v> Split? 1.1 3.1 1.0 1.1 0	
THRU 1> 1.1	(NO. OF LANES) 1.1< 1	THRU Tassajara Ranch
RIGHT 58 1.1	1.0 3.1 1.1 1.0 140 < \(\hat{1}\) V	LEFT
N W + E S		SIG WARRANTS: Urb=N, Rur=Y

STREET NAME: Crow Canyon Rd.

===	========	========			========		===
	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C	
NB	RIGHT (R) THRU (T) LEFT (L) T + R	36 1218 15	36 1218 15 1254	1720 5160 1720 5160	0.0209 0.2360 0.0087 0.2430	0.0087	
SB	RIGHT (R) THRU (T) LEFT (L) T + R	0 2065 0	0 2065 0 2065	1720 5160 1720 5160	0.0000 0.4002 0.0000 0.4002	0.4002	
EB	RIGHT (R) THRU (T) LEFT (L) T + R T + L T + R + L	58 1 0	58 1 0 59 1 59	1720 1720 1720 1720 1720 1720	0.0337 0.0006 0.0000 0.0343 0.0006 0.0343	0.0343	
WB	RIGHT (R) THRU (T) LEFT (L) T + R	0 1 140	0 1 140 1	1720 1720 1720 1720	0.0000 0.0006 0.0814 0.0006	0.0814	
===	TOTAL VOI	JUME-TO-CAP	ACITY RATIO	•		0.52	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.52
INTERSECTION LEVEL OF SERVICE: A

^{*} ADJUSTED FOR RIGHT TURN ON RED INT=TASSNB.INT, VOL=NBADJ.AMV, CAP=

CCTALOS	Software ver	. 2.35 by	TJKM Tr	ansportat	ion Co	onsulta	ants
Condition	on: 2010 No P	roject - Al	====== M Peak	=======================================	====:	======	08/21/96
INTERSEC	======== CTION 8258 C ate	-	Rd./Ca ime		_	DANVI DANVI	
CCTA ME	THOD	RIGHT THRU					8-PHASE SIGNAL
	^	179 666		^	2.1		
LEFT	209 1.0			Sp			STREET NAME:
THRU	210> 2.0	(NO. OF L	ANES)	2.0<	467	THRU	Camino Tassajara
RIGHT	398 1.0	2.0 2.1	2.1	2.0	947	LEFT	
N W + E S	V	291 602	305	v Split? N			SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: Crow Canyon Rd.

===	STREET NAME. COW CATYON RG.							
	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C		
NB	RIGHT (R) THRU (T) LEFT (L) T + R	305 602 291	0 * 602 291 602	3000 3300 3000 4650	0.0000 0.1824 0.0970 0.1295	0.0970		
SB	RIGHT (R) THRU (T) LEFT (L)	179 666 61	0 * 666 61	1650 3300 1650	0.0000 0.2018 0.0370	0.2018		
EB	RIGHT (R) THRU (T) LEFT (L)	398 210 209	238 * 210 209	1650 3300 1650	0.1442 0.0636 0.1267	0.1442		
WB	RIGHT (R) THRU (T) LEFT (L)	285 467 947	224 * 467 947	1650 3300 3000	0.1358 0.1415 0.3157	0.3157		
			ACITY RATIO: DF SERVICE:		=======================================	0.76 C		

^{*} ADJUSTED FOR RIGHT TURN ON RED INT=TASSNB.INT, VOL=NBADJ.AMV, CAP=

	Software ver	=========	========	rtation C	onsulta	=======================================
======	on: 2010 No F	=========	========	========	======	08/21/96
INTERSE Count D	CTION 6001 Cate	row Canyon F Tin		Way Pe		
CCTA ME	THOD	RIGHT THRU I 67 1329	LEFT 0			3-PHASE SIGNAL
	^			^		
LEFT	59 1.0	< v 1.0 3.0	1.0 1.1	Split?	N RIGHT	
THRU	4> 1.1	(NO. OF LAI	NES) 1.1<	4	THRU	STREET NAME: Center Way
RIGHT	30 1.1	1.0 3.0		77	LEFT	
N W + E S	Ÿ	21 2143 LEFT THRU I	79	; N		SIG WARRANTS: Urb=N, Rur=B

STREET NAME: Crow Canyon Rd.

===	========	========		==========	=======				
	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C			
NB	RIGHT (R) THRU (T) LEFT (L)	79 2143 21	2 * 2143 21	1720 5160 1720	0.0012 0.4153 0.0122	0.4153			
SB	RIGHT (R) THRU (T) LEFT (L)	67 1329 0	8 * 1329 0	1720 5160 1720	0.0047 0.2576 0.0000	0.000			
EB	RIGHT (R) THRU (T) LEFT (L) T + R	30 4 59	30 4 59 34	1720 1720 1720 1720	0.0174 0.0023 0.0343 0.0198	0.0198			
WB	RIGHT (R) THRU (T) LEFT (L) T + R	0 4 77	0 4 77 4	1720 1720 1720 1720	0.0000 0.0023 0.0448 0.0023	0.0448			
===	TOTAL VOLUME-TO-CAPACITY RATIO: 0.48 INTERSECTION LEVEL OF SERVICE: A								

* ADJUSTED FOR RIGHT TURN ON RED INT=TASSNB.INT, VOL=NBADJ.PMV, CAP=

CCTALOS Software ver.	2.35 by TJKM Tr	ansportation Consulta	ants
Condition: 2010 No Pr	coject - PM Peak	=======================================	08/21/96
INTERSECTION 6007 Ta	assajara Ranch/Ca Time	mino Tassajara Danvi Peak Hour	
^	RIGHT THRU LEFT 167 4 40	A Colita N	3-PHASE SIGNAL
LEFT 77 1.0			STREET NAME:
THRU 1252> 3.1	(NO. OF LANES)	2.1< 741 THRU	
RIGHT 51 1.1	1.0 1.1 1.1	1.0 18 LEFT V	
N W + E S	36 3 0 LEFT THRU RIGHT	Split? N	SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: Tassajara Ranch

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R) THRU (T) LEFT (L) T + R	0 3 36	0 3 36 3	1720 1720 1720 1720	0.0000 0.0017 0.0209 0.0017	0.0209
SB	RIGHT (R) THRU (T) LEFT (L)	167 4 40	90 * 4 40	1720 1720 1720	0.0523 0.0023 0.0233	0.0523
EB	RIGHT (R) THRU (T) LEFT (L) T + R	51 1252 77	51 1252 77 1303	1720 5160 1720 5160	0.0297 0.2426 0.0448 0.2525	0.0448
WB	RIGHT (R) THRU (T) LEFT (L) T + R	20 741 18	20 741 18 761	1720 3440 1720 3440	0.0116 0.2154 0.0105 0.2212	0.2212
===		LUME-TO-CAPA	ACITY RATIO	:		0.34 A

* ADJUSTED FOR RIGHT TURN ON RED INT=TASSNB.INT, VOL=NBADJ.PMV, CAP=

CCTALOS Softwar	ce ver 23	5 by Tikm T	cansportati	on Consult:	ante
Condition: 2010	No Projec	======== t - PM Peak	========	=======================================	08/21/96
INTERSECTION 7		anyon Rd./Ta	assajara Ra		ILLE
CCTA METHOD		THRU LEFT			3-PHASE SIGNAL
LEFT 0	< 1.1 1.1	v> 3.1 1.0	spl	lit? N 0 RIGHT	
THRU 2:	> 1.1 (NO.	OF LANES)	1.1<	2 THRU	STREET NAME: Tassajara Ranch
RIGHT 33 V N W + E S	< 		V	72 LEFT	SIG WARRANTS: Urb=N, Rur=N
		E: Crow Can	_		
	ORIGINAL	ADJUSTED VOLUME*		V/C	CRITICAL V/C
NB RIGHT (R) THRU (T) LEFT (L) T + R	2234	2234 65	5160 1720	0.4329	0.4610
SB RIGHT (R) THRU (T) LEFT (L) T + R		0 1433 0 1433		0.2777	0.0000
EB RIGHT (R) THRU (T) LEFT (L) T + R	33 2 0	33 2 0 35	1720 1720 1720 1720	0.0192 0.0012 0.0000 0.0203	0.0203

1720 0.0203 35 1720 0.0000 RIGHT (R) 0 0 2 2 1720 THRU (T) 0.0012 72 0.0419 0.0419 1720 LEFT (L) 2 1720 0.0012 T + R

2

TOTAL VOLUME-TO-CAPACITY RATIO: 0.52
INTERSECTION LEVEL OF SERVICE: A

1720

0.0012

T + L

^{*} ADJUSTED FOR RIGHT TURN ON RED INT=TASSNB.INT, VOL=NBADJ.PMV, CAP=

CCTALOS	CCTALOS Software ver. 2.35 by TJKM Transportation Consultants					
Condit	ion: 2010 No	Project - PM Pe	======================================	08/21/96		
	INTERSECTION 8258 Crow Canyon Rd./Camino Tassajara DANVILLE Count Date Time Peak Hour					
CCTA M	ETHOD	RIGHT THRU LEF 163 594 14		8-PHASE SIGNAL		
LEFT			-> Split? 0 1.0 115			
THRU	364> 2.0	(NO. OF LANES) 2.0< 279	THRU Camino Tassajara		
RIGHT	242 1.0	2.0 2.1 2.	1 2.0 551 ->	LEFT		
N W + E S		607 728 86 LEFT THRU RIG		SIG WARRANTS: Urb=Y, Rur=Y		

and the same	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C	
NB	RIGHT (R) THRU (T) LEFT (L) T + R	861 728 607	558 * 728 607 1286	3000 3300 3000 4650	0.1860 0.2206 0.2023 0.2766	0.2023	
SB	RIGHT (R) THRU (T) LEFT (L)	163 594 142	45 * 594 142	1650 3300 . 1650	0.0273 0.1800 0.0861	0.1800	
EB	RIGHT (R) THRU (T) LEFT (L)	242 364 118	0 * 364 118	1650 3300 1650	0.0000 0.1103 0.0715	0.1103	
WB	RIGHT (R) THRU (T) LEFT (L)	115 279 551	0 * 279 551	1650 3300 3000	0.0000 0.0845 0.1837	0.1837	
		UME-TO-CAPA				0.68 B	

^{*} ADJUSTED FOR RIGHT TURN ON RED INT=TASSNB.INT, VOL=NBADJ.PMV, CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants						
Condition: 2010 With Project - AM Peak	08/21/96					
INTERSECTION 6001 Crow Canyon Rd./Center Way DANVILLE Count Date Time Peak Hour						
CCTA METHOD RIGHT THRU LEFT 31 2647 0	3-PHASE SIGNAL					
THRU 2> 1.1 (NO. OF LANES) 1.1< 2 THRU	STREET NAME: Center Way					
RIGHT 9 1.1 1.0 3.0 1.0 1.0 46 LEFT						
N	SIG WARRANTS: Urb=N, Rur=B					
STREET NAME: Crow Canyon Rd						

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R) THRU (T) LEFT (L)	52 1275 18	6 * 1275 18	1720 5160 1720	0.0035 0.2471 0.0105	0.0105
SB	RIGHT (R) THRU (T) LEFT (L)	31 2647 0	0 * 2647 0	1720 5160 1720	0.0000 0.5130 0.0000	0.5130
EB	RIGHT (R) THRU (T) LEFT (L) T + R	9 2 50	9 2 50 11	1720 1720 1720 1720	0.0052 0.0012 0.0291 0.0064	0.0291
WB	RIGHT (R) THRU (T) LEFT (L) T + R	51 2 46	51 2 46 53	1720 1720 1720 1720	0.0297 0.0012 0.0267 0.0308	0.0308
TOTAL VOLUME-TO-CAPACITY RATIO: 0.58 INTERSECTION LEVEL OF SERVICE: A						

^{*} ADJUSTED FOR RIGHT TURN ON RED INT=TASSBD.INT, VOL=BDADJ.AMV, CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants						
Condition: 2010 With Project - AM Peak	08/21/96					
INTERSECTION 6007 Tassajara Ranch/Camino Tassajara Danville Count Date Time Peak Hour						
CCTA METHOD RIGHT THRU LEFT	3-PHASE SIGNAL					
8 1 13						
^						
< v> Split? N						
LEFT 93 1.0 1.0 1.0 1.1 33 RIGHT	STREET NAME:					
THRU 574> 3.1 (NO. OF LANES) 2.1< 2462 THRU						
RIGHT 14 1.1 1.0 1.1 1.1 1.0 0 LEFT						
-						
N	SIG WARRANTS:					
W + E 15 2 11	Urb=N, Rur=N					
S LEFT THRU RIGHT Split? N						

STREET NAME: Tassajara Ranch

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R) THRU (T) LEFT (L) T + R	11 2 15	11 2 15 13	1720 1720 1720 1720	0.0064 0.0012 0.0087 0.0076	0.0076
SB	RIGHT (R) THRU (T) LEFT (L)	8 1 13	0 * 1 13	1720 1720 1720	0.0000 0.0006 0.0076	0.0076
EB	RIGHT (R) THRU (T) LEFT (L) T + R	14 574 93	14 574 93 588	1720 5160 1720 5160	0.0081 0.1112 0.0541 0.1140	0.0541
WB	RIGHT (R) THRU (T) LEFT (L) T + R	33 2462 0	33 2462 0 2495	1720 3440 1720 3440	0.0192 0.7157 0.0000 0.7253	0.7253
TOTAL VOLUME-TO-CAPACITY RATIO: 0.79 INTERSECTION LEVEL OF SERVICE: C						

* ADJUSTED FOR RIGHT TURN ON RED INT=TASSBD.INT, VOL=BDADJ.AMV, CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants Condition: 2010 With Project - AM Peak 08/21/96 INTERSECTION 7091 Crow Canyon Rd./Tassajara Ranch DANVILLE Count Date Time Peak Hour				
LEFT 0 1.1	RIGHT THRU LEFT 0 2689 0	0 RIGHT	STREET NAME:	
	1.0 3.1 1.1 1.0 <	V	SIG WARRANTS: Urb=Y, Rur=Y	

===	=========	ORIGINAL	ADJUSTED	=========	V/C	CRITICAL	==
	MOVEMENT	VOLUME	VOLUME*	CAPACITY	RATIO	V/C	
NB	RIGHT (R) THRU (T) LEFT (L) T + R	35 1349 14	35 1349 14 1384	1720 5160 1720 5160	0.0203 0.2614 0.0081 0.2682	0.0081	
SB	RIGHT (R) THRU (T) LEFT (L) T + R	0 2689 0	0 2689 0 2689	1720 5160 1720 5160	0.0000 0.5211 0.0000 0.5211	0.5211	
EB	RIGHT (R) THRU (T) LEFT (L) T + R T + L T + R + L	59 1 0	59 1 0 60 1 60	1720 1720 1720 1720 1720 1720	0.0343 0.0006 0.0000 0.0349 0.0006 0.0349	0.0349	
WB	RIGHT (R) THRU (T) LEFT (L) T + R	0 1 199	0 1 199 1	1720 1720 1720 1720	0.0000 0.0006 0.1157 0.0006	0.1157	
===	TOTAL VOLUME-TO-CAPACITY RATIO: 0.68 INTERSECTION LEVEL OF SERVICE: B						

* ADJUSTED FOR RIGHT TURN ON RED

^{*} ADJUSTED FOR RIGHT TORN ON RED INT=TASSBD.INT, VOL=BDADJ.AMV, CAP=

CCTALOS S	Software	ver. 2.35	by TJKM Tr	ansportation	on Consulta	nts
Condition	n: 2010	With Proje	======== ect - AM Pea	k	========	08/21/96
INTERSECTION 8258 Crow Canyon Rd./Camino Tassajara DANVILLE Count Date Time Peak Hour						
CCTA METH	HOD	RIGHT 173	696 64	^		8-PHASE SIGNAL
LEFT 19	99		2.0 1.0			STREET NAME:
THRU 24	49>	2.0 (NO.	OF LANES)	2.0<	665 THRU	Camino Tassajara
RIGHT 46	69 		2.1 2.1	2.0 1 	470 LEFT	
N W + E S			634 399 THRU RIGHT	Split? N		SIG WARRANTS: Urb=Y, Rur=Y

===	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R) THRU (T) LEFT (L) T + R	399 634 348	0 * 634 348 634	3000 3300 3000 4650	0.0000 0.1921 0.1160 0.1363	0.1160
SB	RIGHT (R) THRU (T) LEFT (L)	173 696 64	0 * 696 64	1650 3300 1650	0.0000 0.2109 0.0388	0.2109
EB	RIGHT (R) THRU (T) LEFT (L)	469 249 199	278 * 249 199	1650 3300 1650	0.1685 0.0755 0.1206	0.1685
WB	RIGHT (R) THRU (T) LEFT (L)	362 665 1470	298 * 665 1470	1650 3300 3000	0.1806 0.2015 0.4900	0.4900
TOTAL VOLUME-TO-CAPACITY RATIO: INTERSECTION LEVEL OF SERVICE:						0.99 E

^{*} ADJUSTED FOR RIGHT TURN ON RED INT=TASSBD.INT, VOL=BDADJ.AMV, CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants							
Condition: 2010 With	Condition: 2010 With Project - PM Peak 08/21/96						
INTERSECTION 6001 Crow Canyon Rd./Center Way DANVILLE Count Date Time Peak Hour							
CCTA METHOD	RIGHT THRU LEFT	3-PHASE SIGNAL					
^ LEFT 65 1.0	66 1547 64	it? N					
	(NO. OF LANES) 1.1<	STREET NAME:					
	1.0 3.0 1.0 1.0 < ^>	73 LEFT					
N W + E S	21 2725 75 LEFT THRU RIGHT Split? N	SIG WARRANTS: Urb=N, Rur=B					

===	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R) THRU (T) LEFT (L)	75 2725 21	2 * 2725 21	1720 5160 1720	0.0012 0.5281 0.0122	0.5281
SB	RIGHT (R) THRU (T) LEFT (L)	66 1547 64	1 * 1547 64	1720 5160 1720	0.0006 0.2998 0.0372	0.0372
EB	RIGHT (R) THRU (T) LEFT (L) T + R	28 3 65	28 3 65 31	1720 1720 1720 1720	0.0163 0.0017 0.0378 0.0180	0.0180
WB	RIGHT (R) THRU (T) LEFT (L) T + R	0 3 73	0 3 73 3	1720 1720 1720 1720	0.0000 0.0017 0.0424 0.0017	0.0424
===		LUME-TO-CAPI FION LEVEL (ACITY RATIO	:		0.63 B

* ADJUSTED FOR RIGHT TURN ON RED INT=TASSBD.INT, VOL=BDADJ.PMV, CAP=

CCTALOS Software ver	. 2.35 by TJKM Transportation C	onsultants
Condition: 2010 With	Project - PM Peak	08/21/96
INTERSECTION 6007 Ta	assajara Ranch/Camino Tassajara Time Pe	Danville ak Hour
CCTA METHOD I	RIGHT THRU LEFT 158	3-PHASE SIGNAL
^	^ Colita	N
LEFT 10 1.0	< v> Split? 1.0 1.0 1.0 1.1 34	
THRU 2259> 3.1	(NO. OF LANES) 2.1< 1245	STREET NAME: THRU Camino Tassajara
RIGHT 1 1.1	1.0 1.1 1.1 1.0 19	LEFT
N W + E S	33 3 0 LEFT THRU RIGHT Split? N	SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: Tassajara Ranch

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R) THRU (T) LEFT (L) T + R	0 3 33	0 3 33 3	1720 1720 1720 1720	0.0000 0.0017 0.0192 0.0017	0.0192
SB	RIGHT (R) THRU (T) LEFT (L)	158 4 57	148 * 4 57	1720 1720 1720	0.0860 0.0023 0.0331	0.0860
EB	RIGHT (R) THRU (T) LEFT (L) T + R	1 2259 10	1 2259 10 2260	1720 5160 1720 5160	0.0006 0.4378 0.0058 0.4380	0.4380
WB	RIGHT (R) THRU (T) LEFT (L) T + R	34 1245 19	34 1245 19 1279	1720 3440 1720 3440	0.0198 0.3619 0.0110 0.3718	0.0110
===		JUME-TO-CAPA	ACITY RATIO			0.55 A

^{*} ADJUSTED FOR RIGHT TURN ON RED INT=TASSBD.INT, VOL=BDADJ.PMV, CAP=

CCTALOS	Softw	are	ver	. 2.35	by T	JKM Tr	ansport	tatio	n Co	onsulta	ants
Conditio	on: 20	10	With	Proje	ect -	PM Pea	ık				08/21/96
INTERSEC	TION ate	70	91 C:	row Ca			ssajar				
CCTA MET	THOD	^		RIGHT 0	THRU 1647						3-PHASE SIGNAL
				<	V	>	1	Spli	t? I	N .	
LEFT	0	_	1.1	1.1	3.1	1.0	1.1 -		0	RIGHT	COD
THRU	2	->	1.1	(NO.	OF LA	ANES)	1.1<-		1	THRU	STREET NAME: Tassajara Ranch
RIGHT	31	- 				1.1	1.0 -		69	LEFT	
N W + E S		•			2811 THRU		Split?	N			SIG WARRANTS: Urb=N, Rur=N

===	========	========	========		=======	=======================================	
	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C	
				CALACIII		·/ C	
NB	RIGHT (R) THRU (T) LEFT (L) T + R	202 2811 65	202 2811 65 3013	1720 5160 1720 5160	0.1174 0.5448 0.0378 0.5839	0.5839	
SB	RIGHT (R) THRU (T) LEFT (L) T + R	0 1647 0	0 1647 0 1647	1720 5160 1720 5160	0.0000 0.3192 0.0000 0.3192	0.0000	
EB	RIGHT (R) THRU (T) LEFT (L) T + R T + L T + R + L	31 2 0	31 2 0 33 2 33	1720 1720 1720 1720 1720 1720	0.0180 0.0012 0.0000 0.0192 0.0012 0.0192	0.0192	
WB	RIGHT (R) THRU (T) LEFT (L) T + R	0 1 69	0 1 69 1	1720 1720 1720 1720	0.0000 0.0006 0.0401 0.0006	0.0401	
	TOTAL VOL	UME-TO-CAPA	ACITY RATIO:			0.64	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.64
INTERSECTION LEVEL OF SERVICE: B

^{*} ADJUSTED FOR RIGHT TURN ON RED INT=TASSBD.INT, VOL=BDADJ.PMV, CAP=

CCTALO	S Software ve	r. 2.35 by TJKM T:	ransportation Consult	ants
Condit	ion: 2010 Wit	h Project - PM Pea	ak	08/21/96
INTERS		Crow Canyon Rd./Ca	amino Tassajara DANV Peak Hou	
CCTA M	ETHOD	RIGHT THRU LEFT 169 586 224		8-PHASE SIGNAL
	^		^	
LEFT		v> 1.0 2.0 1.0	Split? N 1.0 173 RIGHT	STREET NAME:
THRU	631> 2.0	(NO. OF LANES)	2.0< 436 THRU	
RIGHT	261 1.0 	2.0 2.1 2.1	2.0 817 LEFT	
N W + E S			Split? N	SIG WARRANTS: Urb=Y, Rur=Y

===	-=	=========	=========	=========		
	MOVEMENT		ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R) THRU (T) LEFT (L) T + R	1396 748 643	947 * 748 643 1695	3000 3300 3000 4650	0.3157 0.2267 0.2143 0.3645	0.3645
SB	RIGHT (R) THRU (T) LEFT (L)	169 586 224	39 * 586 224	1650 3300 1650	0.0236 0.1776 0.1358	0.1358
EB	RIGHT (R) THRU (T) LEFT (L)	261 631 130	0 * 631 130	1650 3300 1650	0.0000 0.1912 0.0788	0.1912
WB	RIGHT (R) THRU (T) LEFT (L)	173 436 817	0 * 436 817	1650 3300 3000	0.0000 0.1321 0.2723	0.2723
	TOTAL VOL	UME-TO-CAPA ION LEVEL (ACITY RATIO OF SERVICE:	:	=======================================	0.96 E

* ADJUSTED FOR RIGHT TURN ON RED
INT=TASSBD.INT, VOL=BDADJ.PMV, CAP=

Barton-Aschman 2010 without Project SOLUTION USING REQUIRED CYCLE TIME

Crow Canyon & Cami	no Tas	sajara					A.M	Peak H	our		FLN:cr Scenar	
1				1 2			1			1		
Movement	EBT	EBL	EBR	SBT	SBL	SBR	MBI	MBF	MBK	NBT	HBL	HBR
Phase 1 - 16 secs	4	X		0				X				
Phase 2 - 22 secs	4			4			X	X	X			
Phase 3 - 20 secs	X		X	4			X	9	X			4
Phase 4 - 10 secs	•		X	4	X						X	
Phase 5 - 3 secs	•		X	4		4		4		X	Х	X
Phase 6 - 25 secs	4	4		X	4	X				Х		X
							}			1		
1				ŀ			1			}		
Critical Munt-**			****	****				****			****	
Peak 15 Vol -uph	233	232	442	740	68	199	519	1052	317	672	323	336
Saturation -uph	3300	1650	1658	3300	1650	1650	3300	3000	1650	3300	3000	1650
Lost time -sec	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.80	2.00	2.00	2.00
Relative Sat 'X'	0.38	0.96	0.83	0.94	0.49	0.50	0.38	0.94	0.46	0.75	0.94	0.75
Effective Gr-sec	18	14	31	23	8	23	40	36	40	26	- 11	26
Move Time -sec	20	16	33	25	10	25	42	38	42	28	13	28
Min/Ped Time-sec	20	10	20	28	10	20	20	10	20	20	10	20
Prog Factor PRF	1.00	1.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AuDelay/veh -sec	26	66	30	40	34	25	15	32	16	27	56	29
Level of Service	D+	F	0	E+	₿	£-	8-	, 0	, C+	[]+	E-	<u>B</u> +
Au. Q'/ lane weh	3	6	8	8	2	4	4) (9)	5	7	4	
Ueh Stopping X	87	99	92	98	96	86	69	96	72	92	99	92
Do Veh Clear ?	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
1				1			1			1		

Whole Intersection - Weighted Av Belay (sec) = 32 Level of Service = D Critical Movements - Weighted Av Belay (sec) = 37 Level of Service = B-- Intersection Capacity Utilization (ICU) = 0.91

Required Cycle Length is 96 seconds (All Minimum times are satisfied)

* CAPSSI (Release 11) - Based on Delay Methodology Per 1985 Highway Capacity Manual

Barton-Aschman 2010 with Project SOLUTION USING REQUIRED CYCLE TIME

											FLM:cr	owcami	
Crow Canyon & Cami	no Tas	sajara					R.M	Peak H	our		Scenario 2		
				:			1 1			1			
Movement	EBT	EBL	EBR	SBT	SBL	SBR	UBT	MBL	WBR	HBT	MBL	MBR	
Phase 1 - 17 secs		X						X					
Phase 2 - 45 secs			4				X	X	X				
Phase 3 - 20 secs	X		X				X		X				
Phase 4 - 10 secs	,	4	X		Х		4				X		
Phase 5 - 6 secs			X			4				X	Х	X	
Phase 6 - 28 secs		4		X		X				X		X	
1				i			i						
Critical Munt-**			****	****				****			****		
Peak 15 Vol -uph	277	221	521	773	71	192	739	1633	402	765	387	383	
Saturation -uph	3300	1650	1650	3300	1650	1650	3300	3000	1650	3300	3000	1650	
Lost time -sec	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
Relative Sat 'X'	0.59	1.13	1.17	1.14	0.68	0.56	0.45	1.14	0.49	0.91	1.16	0.91	
Effective Gr-sec	18	15	34	26	8	26	63	60	63	32	14	32	
Move Time -sec	20	17	36	28	10	28	65	62	65	34	16	34	
Min/Ped Time-sec	20	18	20	20	10	20	20	10	20	20	10	20	
Prog Factor PRF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
RuBelay/ueh -sec	40	142	141	117	54	36	16	102	16	45	148	52	
Level of Service	D-	F	F	F	Ε	[]-	{\pmu}	/F	£+	E+	F	E	
Av. Q'/ lane weh	4	8	17	13	2	5	6	(19	7	(10)	7	110	
Weh Stopping I	94	100	100	100	98	90	64	100	66	97	100	97	
Do Weh Clear ?	YES	NO	HO	HO	YES	YES	YES	NO	YES	YES	NO	YES	
1			n Auge	3 2			1			1			

>>>> Intersection Oversaturated - Delay Values Not Meaningful! <<<<

Required Cycle Length is 126 seconds (All Minimum times are satisfied)

Whole Intersection - Weighted Au Delay (sec) = 81 Level of Service = F Critical Movements - Weighted Au Delay (sec) = 117 Level of Service = F - Intersection Capacity Utilization (ICU) = 1.16

^{*} CAPSSI (Release 11) - Based on Delay Methodology Per 1985 Highway Capacity Manual

Barton-Aschman 2010 w/o Project w/RTR SOLUTION USING REQUIRED CYCLE TIME

Movement Phase 1 - 10 secs	EBT .	EBL		ı								
		EBL		1			1					
Phase 1 - 10 secs			EBR	SBT	SBL	SBR	WBT	MBL	UBR	HBT	NBL	NBR
		X						X				X
Phase 2 - 11 secs							X	X	X			X
Phase 3 - 20 secs	X		X		4	4	X		X		4	
Phase 4 - 11 secs					X		ā	4	4		X	4
Phase 5 - 12 secs	4		4	,				4		X	X	X
Phase 6 - 21 secs	٠			X		X				X	4	X
1				!			ŧ			1		
1				1			1			1		
Critical Munt-**			****	****				****			****	
Peak 15 Vol -uph	404	131	269	660	158	181	310	612	128	953	674	813
Saturation -uph	3300	1650	1650	3300	1650	1650	3300	3000	1650	3300	3000	1650
Lost time -sec	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Relative Sat 'X'	0.58	0.84	0.77	0.89	0.90	0.49	0.28	0.91	0.23	8.79	0.91	0.81
Effective Gr-sec	18	8	18	19	9	19	29	19	29	31	21	52
Move Time -sec	20	10	20	21	- 11	21	31	21	31	33	23	54
Min/Ped Time-sec	20	10	20	20	10	20	20	10	20	20	10	20
Prog Factor PAF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AuDelay/veh -sec	24	51	31	34	58	23	16	37	15	21	35	13
Level of Service	C-	E	9	D	E-	C-	£+	0-	/ E+	C-	/ 0	8-
Au. 'Q' / lane weh	4	3	5	6	4	3	2	(b)	2	7	6	7
Veh Stopping %	90	98	94	97	99	87	73	98	71	89	97	77
Do Veh Clear ?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Whole Intersection - Weighted Av Delay (sec) = 27 Level of Service = 0+
Critical Movements - Weighted Av Delay (sec) = 34 Level of Service = 0
'' - Intersection Capacity Utilization (ICU) = 0.87

Required Cycle Length is 85 seconds (All Minimum times are satisfied)

* CAPSSI (Release 11) - Based on Delay Methodology Per 1985 Highway Capacity Manual

Barton-Aschman 2010 with Project w/RTR SOLUTION USING REQUIRED CYCLE TIME

FLN: crowcami Crow Canyon & Camino Tassajara P.M Peak Hour Scenario 6 Movement ERI EBL EBR SBI SBL SBR UBT UBL LIBR NBT Phase 1 - 18 secs Phase 2 - 17 secs Phase 3 - 20 secs Phase 4 - 13 secs Phase 5 - 9 secs Phase 6 - 25 secs Critical Munt-** *** *** **** *** Peak 15 Vol -uph 701 144 298 651 249 188 484 908 192 1255 1127 Saturation -uph 3300 1650 1650 3300 1650 1658 3300 3000 1650 3300 3000 1650 2.00 2.00 Lost time -sec 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.08 Relative Sat 'X' 1.11 1.03 0.92 0.81 1.29 0.47 0.39 1.14 0.31 1.12 18 8 18 23 23 35 25 35 Effective Gr-sec -11 32 Move Time -sec 28 10 20 25 13 25 3? 27 37 34 22 61 Min/Ped Time-sec 20 10 20 20 10 20 20 18 20 20 20 10 Prog Factor PAF 1.00 1.80 1.00 1.00 1.00 1.00 1.90 1.00 1.00 100 242 24 17 104 AuDelay/ueh -sec 96 50 30 16 Level of Service F £ 11+ C-Au. 0 / Iane ueh 9 6 6 4 (11)(13)(15) Veh Stopping X 100 98 94 100 85 74 100 71 100 100 100 100 YES YES NO YES YES Do Veh Clear ? NO YES NO

Required Cycle Length is 94 seconds (All Minimum times are satisfied)

>>>> Intersection Oversaturated - Delay Values Not Meaningful! <<<<

Whole Intersection - Weighted Ru Delay (sec) = 78 Level of Service = F
Critical Movements - Weighted Ru Delay (sec) = 107 Level of Service = F
- Intersection Capacity Utilization (ICU) = 1.14

^{*} CAPSSI (Release 11) - Based on Delay Methodology Per 1985 Highway Capacity Manual

CAPSSI

COMPREHENSIVE ANALYSIS PROGRAM FOR A SINGLE SIGNALIZED INTERSECTION *

Barton-Aschman 2010 without Project SOLUTION USING REQUIRED CYCLE TIME

Movement EBT EBL EBR SBT SBL SBR UBT UBL UBR NBT NBL NB Phase 1 - 20 secs												
1				}			1			1		
Movement	EBT	EBL	EBR	SBT	SBL	SBR	UBT	WBL.	WBR	NBT	NBL	MBR
Phase 1 - 20 secs	X	X	X		4	4	X	X	X			
Phase 2 - 10 secs			4	4	X				٠		X	
Phase 3 - 191 secs		4		X		X	4			Х		X
Phase 4 - 0 secs			4									
Phase 5 - 0 secs							4				4	
Phase 6 - 0 secs												
				1			1			1		
1				1			1			1		
Critical Munt-**		****		****							****	
Peak 15 Vol -uph	10	59	18	2234	10	33	10	51	10	1272	19	57
Saturation -uph	1650	1400	Shrd	4950	1650	1650	1650	1400	Shrd	4950	1650	1650
Lost time -sec	2.00	0.00	-	2.00	2.00	2.00	2.00	0.00	-	2.00	2.00	2.00
Relative Sat 'X'	8.15	0.47	-	0.53	0.17	0.02	0.15	0.40	-	0.30	0.32	0.04
Effective Gr-sec	18	20	-	189	8	189	18	20	-	189	8	189
Move Time -sec	20	20	40-	191	10	191	20	20	-	191	10	191
Min/Ped Time-sec	20	10	-	20	10	28	20	10	-	20	10	20
Prog Factor PRF	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00
AuBelay/weh -sec	72	74	-	3	79	2	72	73	-	2	80	2
Level of Service	F	F	-	Я	F	Я	F	F	~	A	F	R
Au. 'Q' / lane weh	1	3	-	7) 1	0	1	3	400	4) 1	1
Weh Stopping X	93	95	-	26	97	15	93	94	-	19	98	15
Bo Veh Clear ?	YES	YES	-	YES	YES	YES	YES	YES	-	YES	YES	YES

Whole Intersection - Weighted Au Delay (sec) = 6 Level of Service = 8+ Critical Movements - Weighted Au Delay (sec) = 6 Level of Service = 8+ - Intersection Capacity Utilization (ICU) = 0.51

Required Cycle Length is 221 seconds (All Minimum times are satisfied)

* CAPSSI (Release 11) - Based on Delay Methodology Per 1985 Highway Capacity Manual

Barton-Aschman 2010 with Project SOLUTION USING REQUIRED CYCLE TIME

											FLN:cr	oucent
Crow Canyon & Cent	.er						A.M	Peak H	our		Scenar	10 2
6				1 1			1			1		
Movement	EBT	EBL	EBR	SBT	SBL	SBR	UBT	U8L	UBR	NBT	NBL	HBR
Phase 1 - 20 secs	X	X	X			4	X	X	X			
Phase 2 - 10 secs					X	1					X	
Phase 3 - 253 secs	4			X		Х				X		X
Phase 4 - 0 secs	٠								,			
Phase 5 - 0 secs												
Phase 6 - 0 secs				•								
f				ļ			1			1		
1				i			}			i i		
Critical Mumt-**		****		****							****	
Peak 15 Vol -uph	10	55	10	2941	10	34	10	51	57	1417	20	58
Saturation -uph	1650	1300	Shrd	4950	1650	1650	1650	1400	Shrd	4950	1650	1650
Lost time -sec	2.00	0.00	-	2.00	2.00	2.00	2.00	0.00	-	2.00	2.00	2.00
Relative Sat 'X'	0.19	0.60	-	0.67	0.21	0.02	0.64	0.52	-	0.32	8.43	0.04
Effective Gr-sec	18	20	-	251	8	251	18	20	+	251	8	251
Move Time -sec	20	20	-	253	10	253	20	20	-	253	10	253
Min/Ped Time-sec	20	10	-	20	10	20	20	10	-	20	10	20
Prog Factor PAF	1.80	1.00	-	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00
AuDelay/weh -sec	96	104	~	4	103	1	106	100	-	2	107	1
Level of Service	F	F	-	A	F	A	F	F	-	A	F	B
Ru. Q'/ lane weh	1	4	-	(9)	1	0	5	4	100	4) 2	1
Weh Stopping X	95	97	-	28	98	12	98	96	-	16	98	12
Do Weh Clear ?	YES	YES	-	YES	YES	YES	YES	YES	-	YES	YES	YES
				1								

Whole Intersection - Weighted Ru Delay (sec) = 8 Level of Service = 8+
Critical Movements - Weighted Ru Delay (sec) = 6 Level of Service = 8+
- Intersection Capacity Utilization (ICU) = 0.66

Required Cycle Length is 283 seconds (All Minimum times are satisfied)

^{*} CAPSSI (Release 11) - Based on Delay Methodology Per 1985 Highway Capacity Manual

Barton-Aschman 2010 without Project SOLUTION USING REQUIRED CYCLE TIME

Crow Canyon & Cent	er						P.M	Peak H	our		FLM:cr Scenar	oucent io 3
1				1			1			1		
Movement	E81	EBL	EBR	SBT	SBL	SBR	WBT	UBL	WBR	HBT	NBL	MBR
Phase 1 - 20 secs	X	X	X				Х	X	X			
Phase 2 - 10 secs					X	٠					X	
Phase 3 - 158 secs				X		X	4			X		X
Phase 4 - 0 secs												
Phase 5 - 0 secs												
Phase 6 - 0 secs										,		•
}				1			1			!		
i				ŀ			1			1		
Critical Mumt-**								****		****	****	
Peak 15 Vol -uph	10	66	33	1477	10	74	10	86	10	2381	23	88
Saturation -vph	1658	1400	Shrd	4958	1650	1650	1650	1400	Shrd	4950	1650	1650
Lost time -sec	2.00	0.00	~	2.00	2.00	2.00	2.00	0.00	-	2.00	2.00	2.00
Relative Sat 'X'	0.27	0.44	-	0.36	0.14	0.05	0.13	0.58	~	0.58	0.33	0.06
Effective Gr-sec	18	20	-	156	8	156	18	20	-	156	8	156
Move Time -sec	20	20	-	158	10	158	20	28	-	158	10	158
Min/Ped Time-sec	20	10	-	20	10	20	20	10	-	20	10	20
Prog Factor PAF	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00
AuDelay/veh -sec	60	61	-	3	66	2	59	65	-	4	67	2
Level of Service	F	F	~	R	F	A	E-	F	-	A	F	A
Rv. Q'/ lane weh	2	3	-	4) 1	1	1	4		7) 1	1
Veh Stopping I	93	94	~	24	96	18	92	95	-	33	97	18
Do Veh Clear ?	YES	YES	-	YES	YES	YES	YES	YES	-	YES	YES	YES
				1			1			1		

Whole Intersection - Weighted Ru Delay (sec) = 7 Level of Service = 8+ Critical Movements - Weighted Ru Delay (sec) = 7 Level of Service = 8+ - Intersection Capacity Utilization (ICU) = 0.57

Required Cycle Length is 188 seconds (All Minimum times are satisfied)

* CAPSSI (Release 11) - Based on Delay Methodology Per 1985 Highway Capacity Manual

Barton-Aschman 2010 with Project SOLUTION USING REQUIRED CYCLE TIME

Crow Canyon & Cent	er						P.M	Peak H	our		FLN:cr Scenar	
1				1			!			!		
Movement	EBT	EBL	EBR	SBT	SBL	SBR	UBT	MBL	₩BR	NBT	NBL	NBR
Phase 1 - 20 secs	X	X	X		4		X	X	Х	,		
Phase 2 - 10 secs		٠			X	4		4			X	
Phase 3 - 0 secs	4			X	X	X	4					
Phase 4 - 127 secs				Х		X		4		X		Х
Phase 5 - 8 secs				,								
Phase 6 - 0 secs												
1				1			İ			}		
†				1			i i			1		
Critical Munt-**					****			****		****		
Peak 15 Vol -uph	10	72	31	1719	71	73	10	81	10	3028	23	83
Saturation -uph	1650	1400	Shrd	4950	1650	1650	1650	1400	Shrd	4950	1650	1650
Lost time -sec	2.00	0.00	-	2.00	2.00	2.00	2.00	0.00	-	2.00	2.00	2.00
Relative Sat 'X'	0.22	0.40	-	0.44	0.84	0.06	0.11	0.45	-	0.77	8.27	0.06
Effective Gr-sec	18	20	-	125	8	125	18	20	-	125	8	125
Move Time -sec	20	20	-	127	10	127	20	20	-	127	10	127
Min/Ped Time-sec	29	10	-	20	10	20	28	10	-	20	10	20
Prog Factor PAF	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00
AuDelay/veh -sec	48	49	-	4	90	3	4?	50	-	7	55	3
Level of Service	E	E	-	Я	F	A	E	E	-	₽+	Ε	Я
Ru. Q'/ lane weh	2	3	-	(5)) 3	1	1	3	-	9) 1	1
Weh Stopping X	91	92	-	31	99	21	90	93	-	52	96	21
Do Veh Clear ?	YES	YES	-	YES	YES	YES	YES	YES	-	YES	YES	YES
1				1			1			1		

Whole Intersection - Weighted Rv Delay (sec) = 9 Level of Service = 8+ Critical Movements - Weighted Rv Delay (sec) = 10 Level of Service = 8+ - Intersection Capacity Utilization (ICU) = 0.73

Required Cycle Length is 157 seconds (All Minimum times are satisfied)

* CAPSSI (Release 11) - Based on Delay Methodology Per 1985 Highway Capacity Manual

IX. Mitigation Packages A and C Project Trip Assignments

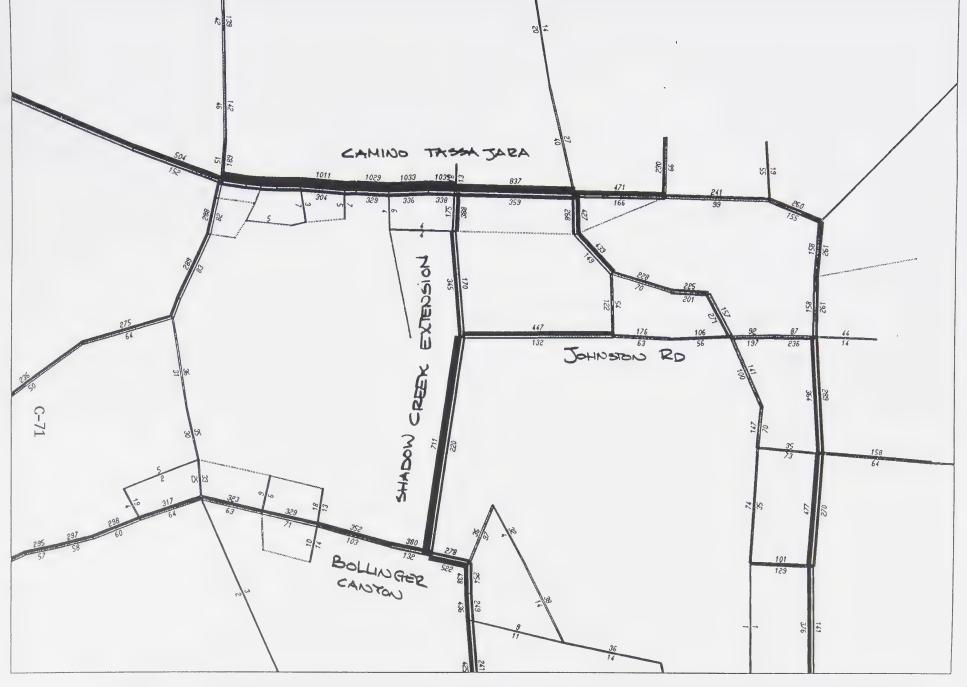


Figure 1. Mitigation Package C (Shadow Creek Extension) Project Trips -- AM Peak Hour Project Trips Only

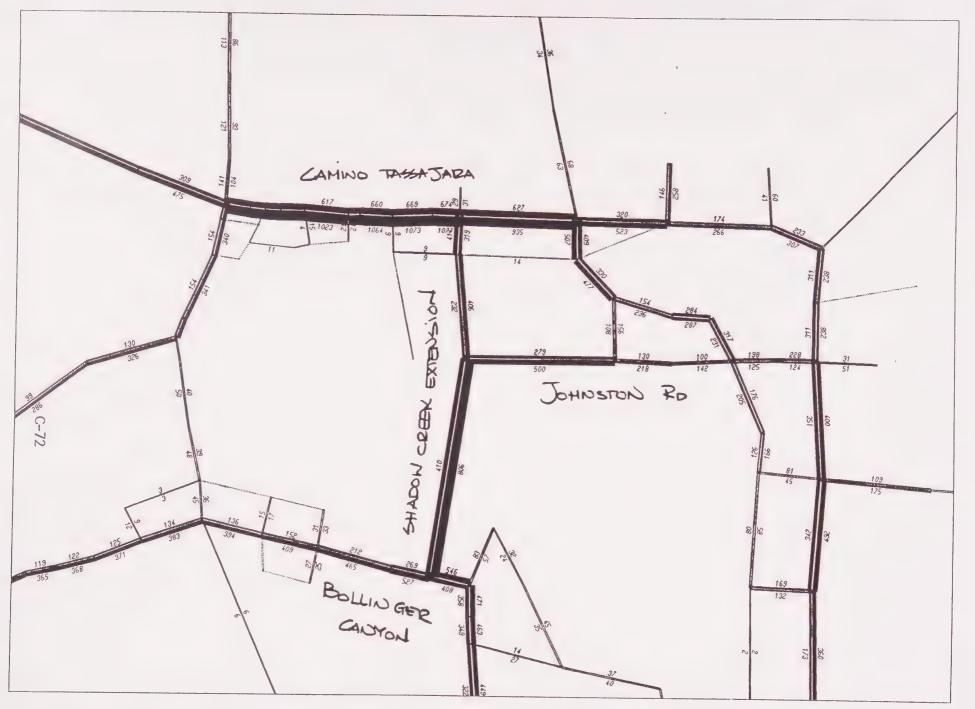


Figure 2. Mitigation Package C (Shadow Creek Extension) Project Trips -- PM Peak Hour Project Trips Only

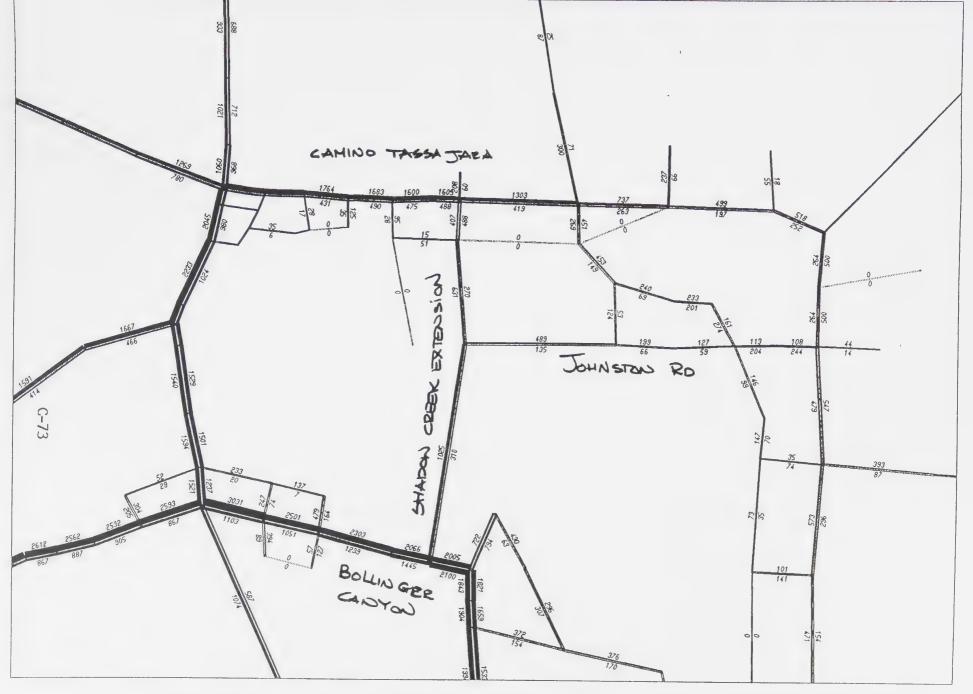


Figure 3. Mitigation Package C (Shadow Creek Extension) Project Trips -- AM Peak Hour Total Trips

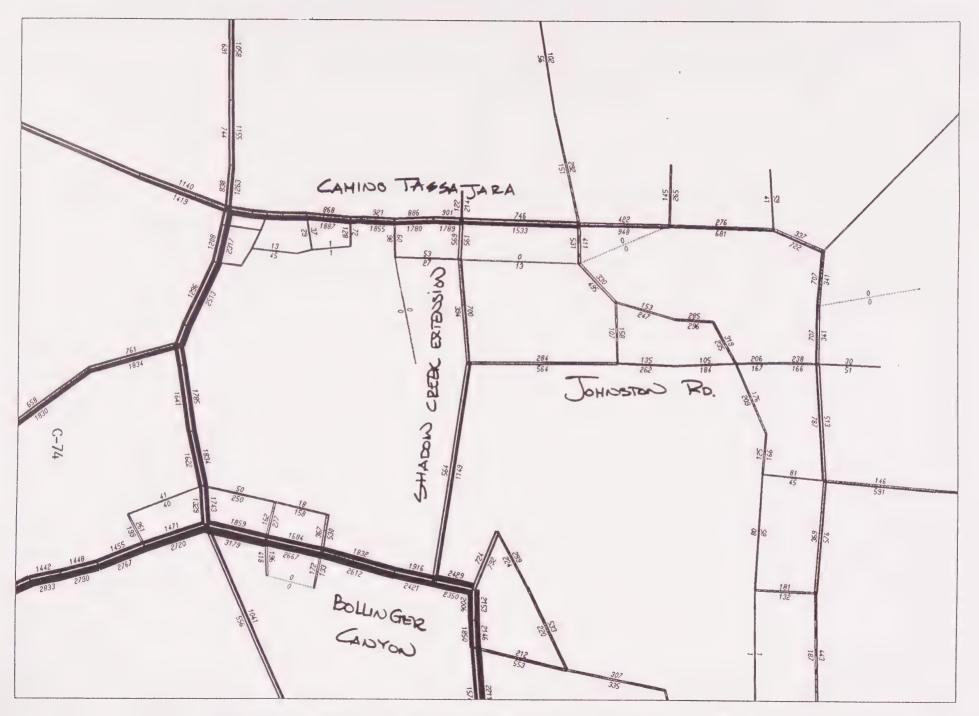


Figure 4. Mitigation Package C (Shadow Creek Extension) Project Trips -- PM Peak Hour Total Trips

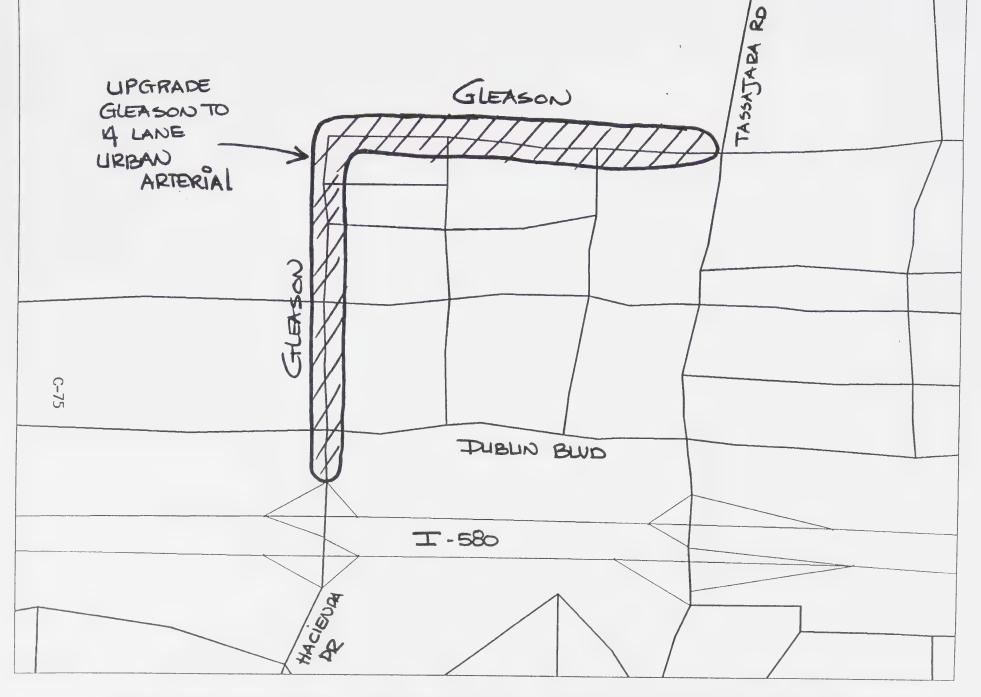


Figure 5. Mitigation Package A (Measure 4.5-3A-1(b)) -- Gleason Drive Upgrade to Four-Lane Urban Arterial

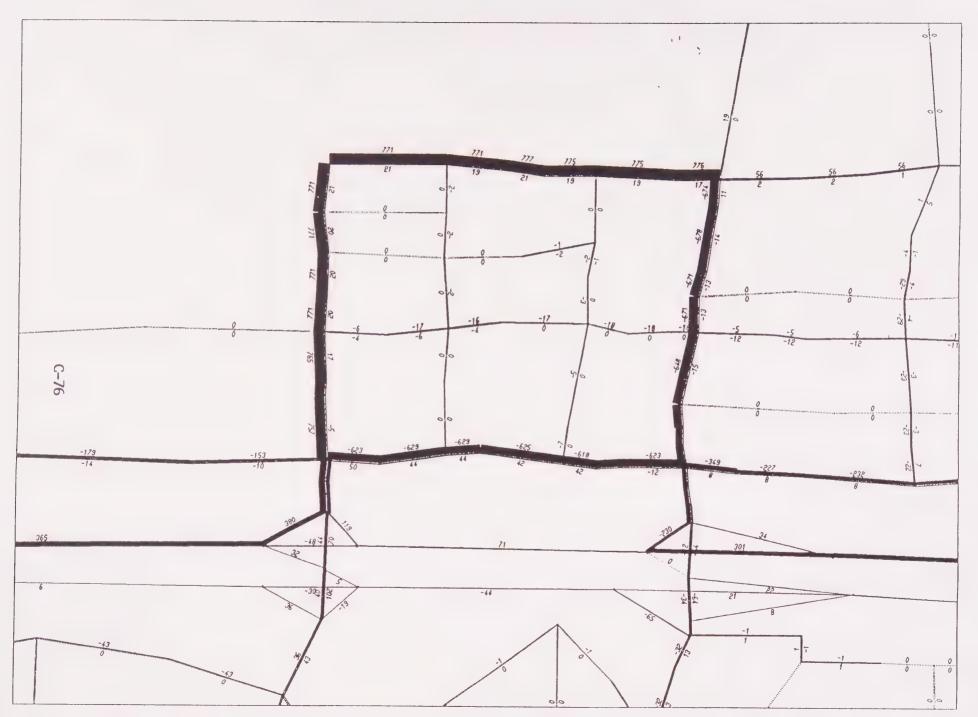


Figure 6. Mitigation Package A Traffic Diversion Due to Gleason Drive Upgrade -- AM Peak Hour

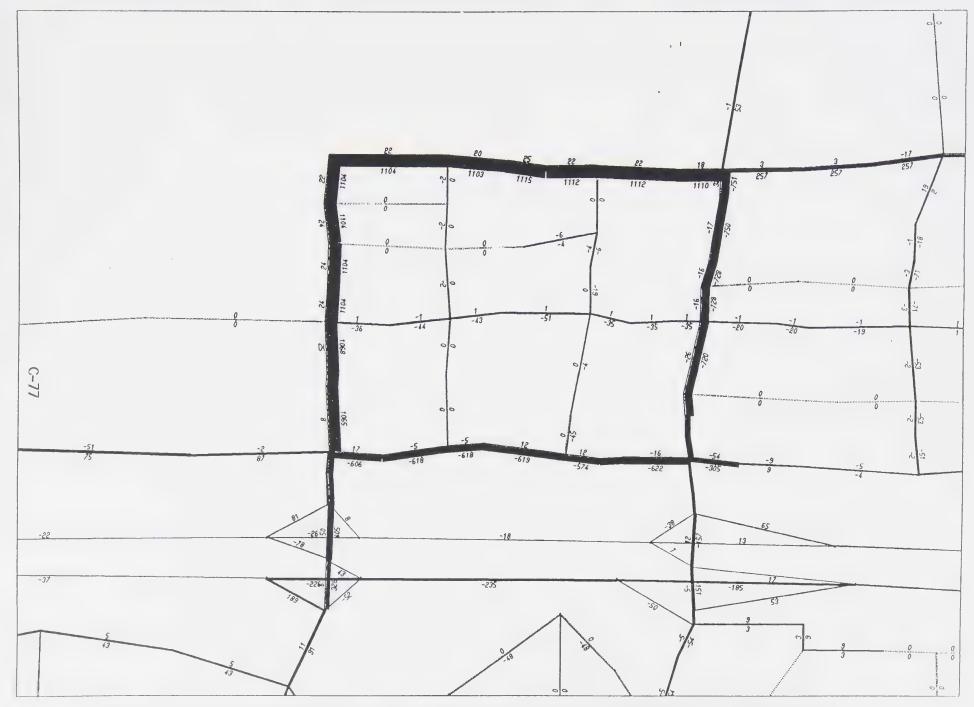
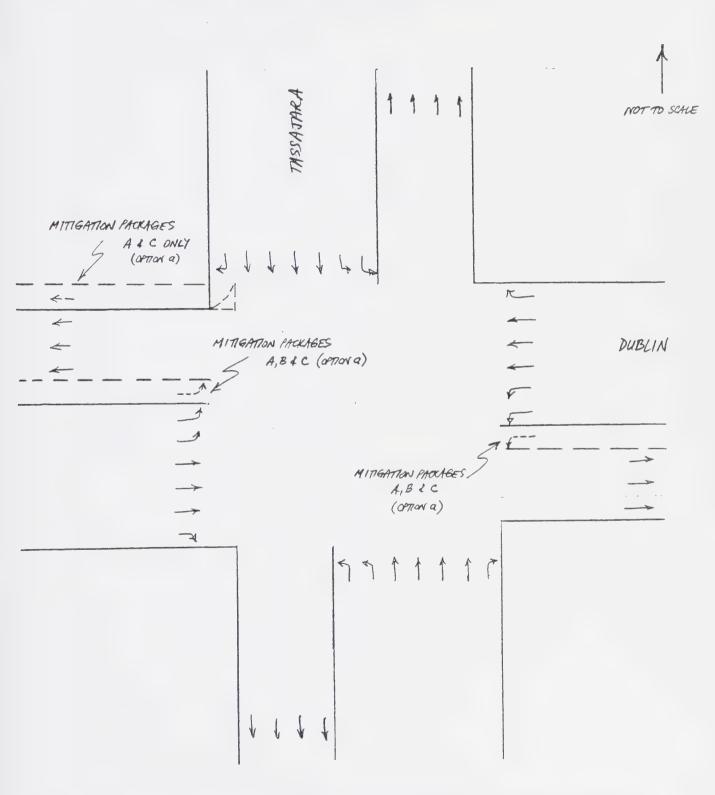


Figure 7. Mitigation Package A Traffic Diversion Due to Gleason Drive Upgrade -- PM Peak Hour

X. Intersection Mitigation Measures

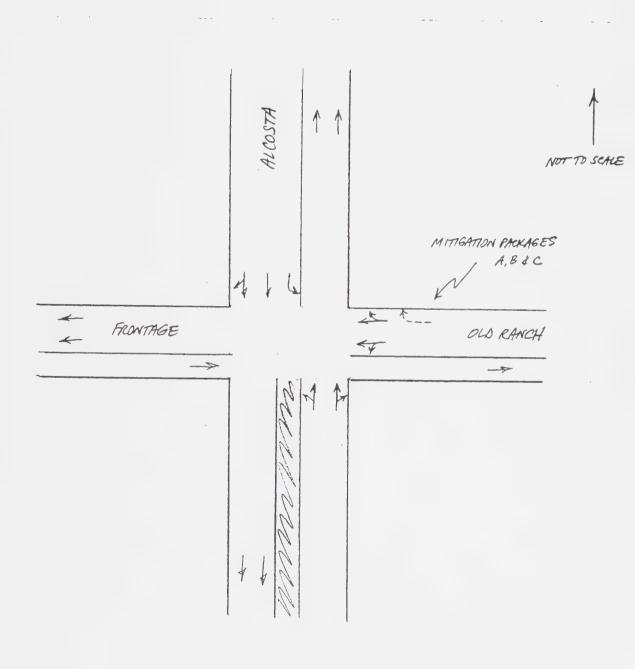
MASSATARA / DUBUN (1573)

DIAGRAM INTENDED TO CONVEY LANE USAGE ONLY



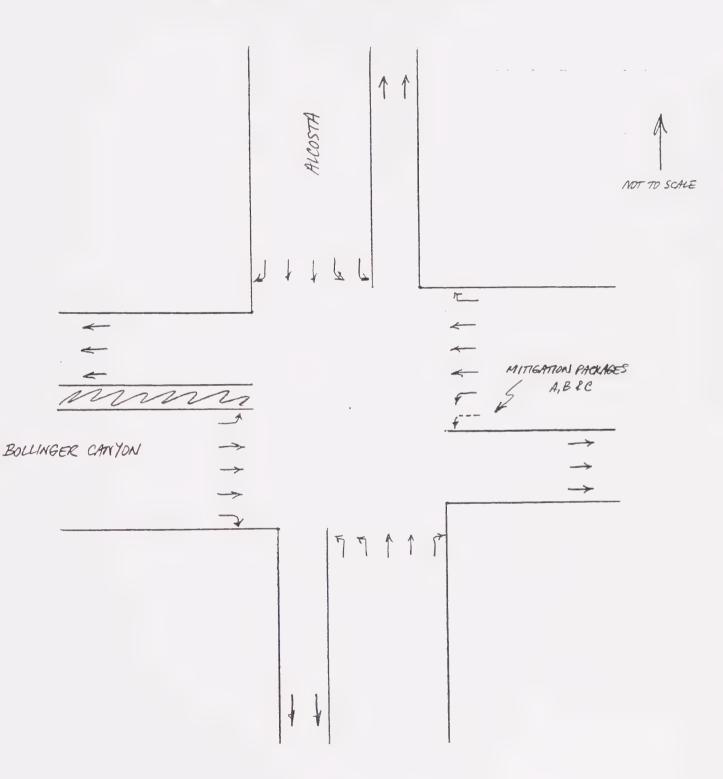
ALCOSTA/OLD RANCH (1705)

DIAGRAM INTENDED TO CONVEY LANE USAGE ONLY



ALCOSTA BOLLINGER CANYON (1789)

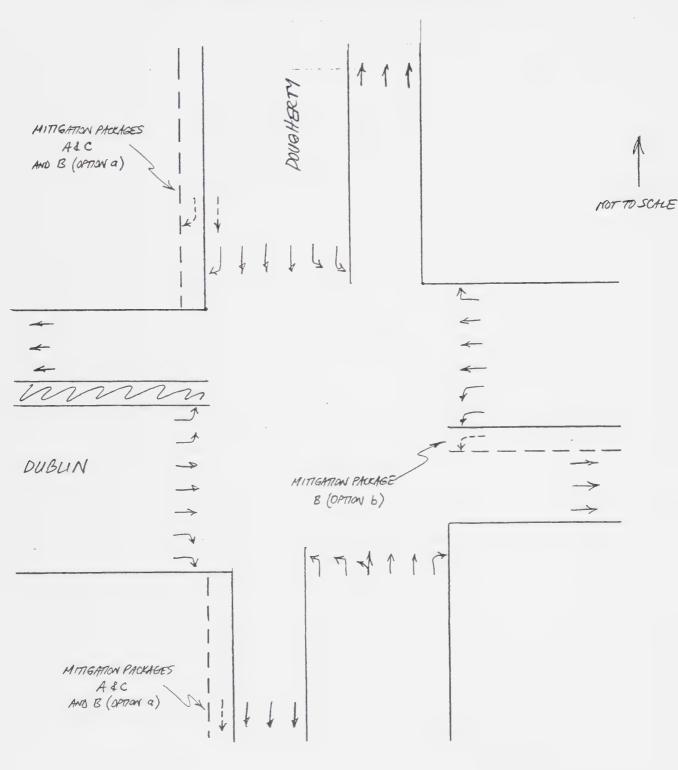
DIAGRAM INTERDED TO CONVEY LANE USAGE ONLY



- - - DASHED LINES SHOW PROPOSED MITIGATION NEASURES
- SOUD LINES SHOW 2010 PLANNED LANE CONFIGURATION

DOUGHERTY / DUBLIN (3977)

DIA GRAM INTENDED TO CONVEY LANE USAGE ONLY

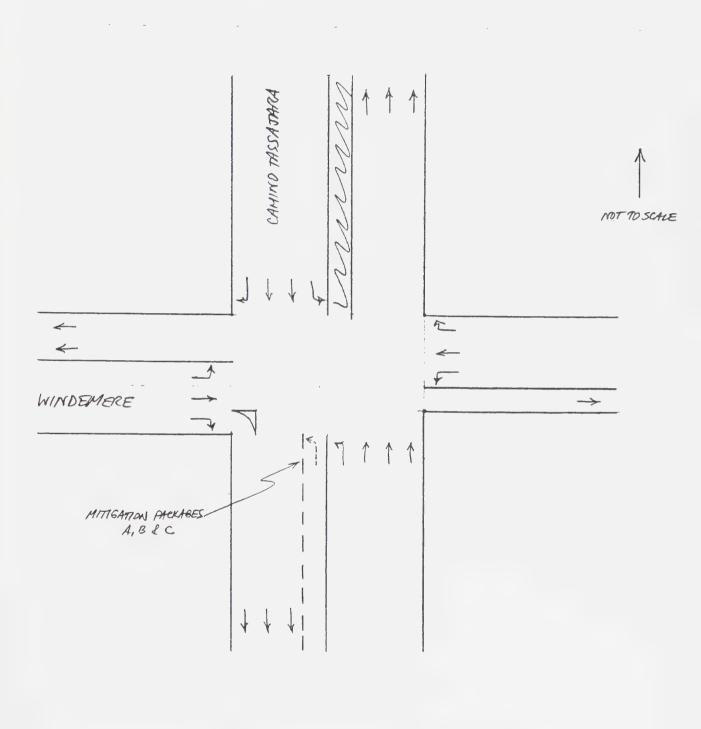


- - - DASHED LINES SHOW PROPOSED MITIGATION MEASURE

SOLID LINES SHOW 2010 PLANNED LANE CONFIGURATION

CAMINO TASSATARA / WINDEMBRE (5811)

DIAGRAM INTERDED TO CONVEY LAME USAGE ONLY

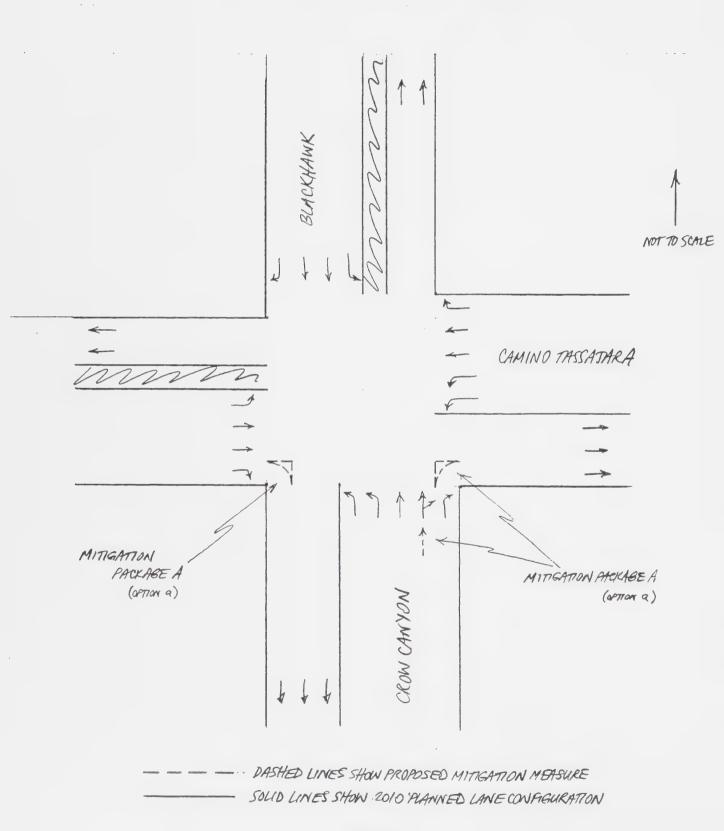


---- DASHED LINES SHOW PROPOSED MITIGATION NEASURE

SOUND LINES SHOW 2010 PLANNER, LANE CONFIGURATION

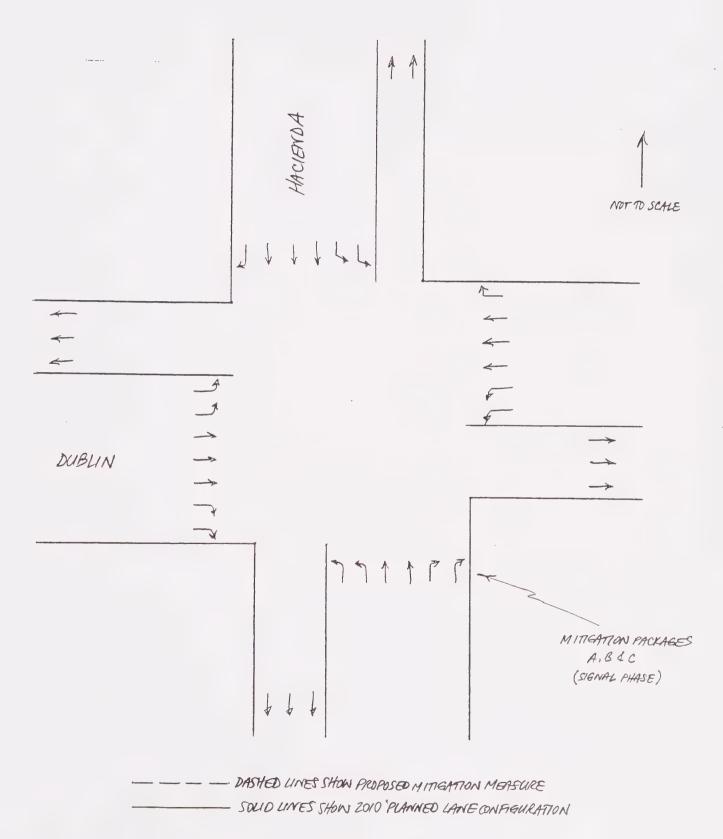
CAMINO TASSA JARA / CLOW CANYON (8258)

DIAGRAM INTENDED TO CONVEY LANE USHEE ONLY

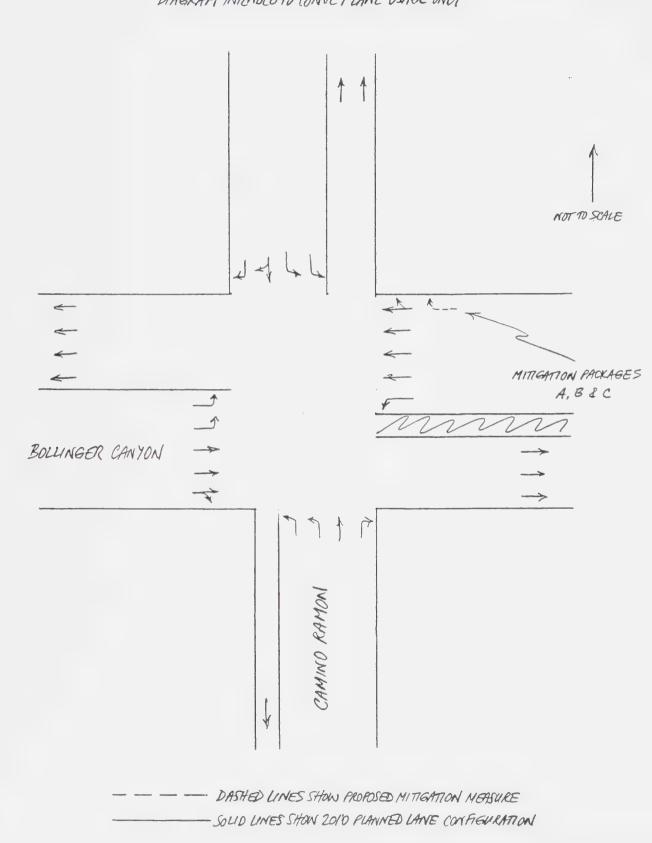


HACIENSA/DUBLIN (8306)

DIAGRAM INTENDED TO CONVEY LANE USAGE ONLY

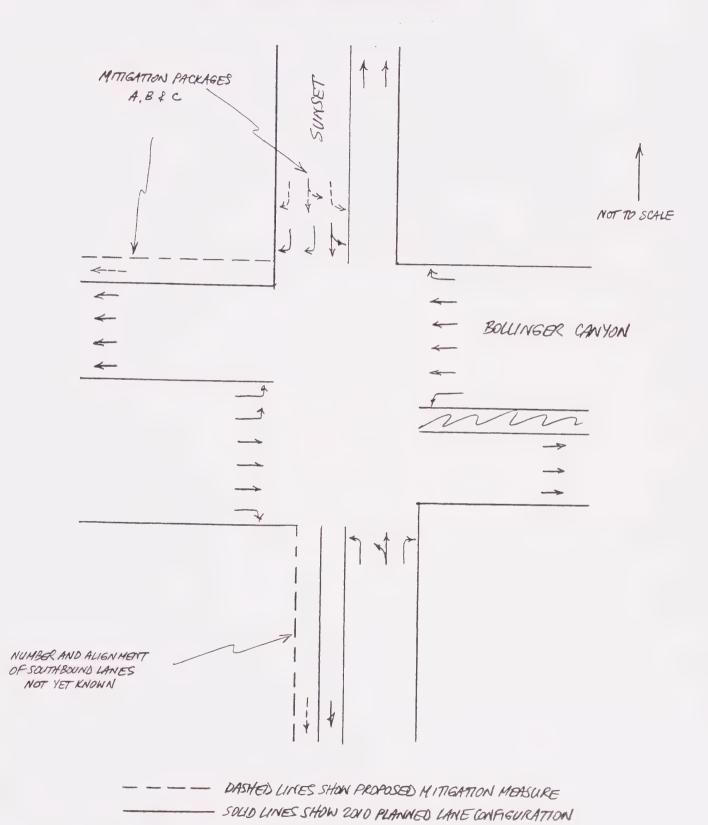


CAMINO RAMON BOLLINGER CANYON (9100) DIAGRAM INTENDED TO CONVEY LANE USAGE ONLY



SUNSET/BOLLINGER CANYON (9340)

DIAGRAM INTENSED TO CONVEY LANE USAGE ONLY



APPENDIX D

FUTURE TRAFFIC NOISE LEVEL CONTOUR DISTANCES WITH AND WITHOUT THE PROJECT



APPENDIX D

FUTURE TRAFFIC NOISE LEVEL CONTOUR DISTANCES WITH AND W/O THE PROJECT

TASSFUT

	SPEED	TRUCK%	Ldn @		OUR	n NOI DISTA	NCE(F	EET)
ADT	AU MT HT	MT HT	50'	80	75	70	65	60
1 ALCOSTA BLVD. FROM: Bollinger Canyon WITH PROJECT 22,500 W/O PROJECT 19,200 TO: Montevideo	40 40 40	1.0 1.0	71 70	0	0	59 50	151 136	326 293
FROM: Montevideo WITH PROJECT 14,900 W/O PROJECT 12,200 TO: Old Ranch FROM: Old Ranch	40 40 40	1.0 1.0	69 68	0	0	39 32	115	248 217
	40 40 40	1.0 1.0	67 66	0	0	25 0	80 64	186 161
2 BLACKHAWK RD.								
FROM: Mt. Diablo Scenic WITH PROJECT 16,500 W/O PROJECT 16,000 TO: Blackhawk Dr.		1.0 1.0	69 69	0	0	43 42	123 121	265 260
FROM: Blackhawk Dr. WITH PROJECT 20,500 W/O PROJECT 21,000 TO: Camino Tassajara	40 40 40	1.0 1.0	70 70	0	0	54 55	142 144	306 311
3 BOLLINGER CANYON RD.								
FROM: Alcosta WITH PROJECT 42,200 W/O PROJECT 37,000 TO: Dougherty	40 40 40	1.0 1.0	73 73	0	35 31	107 97	230 211	496 454
FROM: Dougherty WITH PROJECT 47,200 W/O PROJECT 46,000 TO: New Rd.	40 40 40	1.0 1.0	74 74	0	39 38	115 113	248 244	534 525
FROM: New Rd. WITH PROJECT 35,800 W/O PROJECT 34,000 TO: East Ranch	40 40 40	1.0 1.0	73 72	0			206 199	
FROM: East Ranch WITH PROJECT 29,600 W/O PROJECT 27,000 TO: Windemere	40 40 40	1.0 1.0	72 71	0	0		182 171	391 368
4 CAMINO TASSAJARA RD.								
FROM: Sycamore Valley WITH PROJECT 32,600 W/O PROJECT 29,300 TO: Crow Canyon	45 45 45	1.0 1.0	74 73	0		109		

Appendix D (cont'd)

	SPEED	TRUCK%	Ldn @			n NOI DISTA		EET)
ADT	AU MT HT	MT HT	50'		75	70	65	60
4 CAMINO TASSAJARA RD. FROM: Crow Canyon								
	45 45 45	1.0 1.0	75 73	0	50 28	136 90	294 200	633 431
WITH PROJECT 34,200 W/O PROJECT 15,700 TO: Blackhawk Dr. FROM: Blackhawk Dr.	45 45 45	1.0 1.0	74 70	0	38	113 55	243 145	523 311
WITH PROJECT 14,900 W/O PROJECT 12,900 TO: Finley FROM: Finley	45 45 45	1.0 1.0	70 70	0	0	52 45	140 127	301 273
WITH PROJECT 14,500 W/O PROJECT 12,800 TO: Johnston FROM: Johnston	45 45 45	1.0 1.0	70 70	0	0	51 45	137 126	295 272
	45 45 45	1.0 1.0	71 70	0	0	64 4 5	159 126	344 272
WITH PROJECT 14,300 W/O PROJECT 3,700 TO: Windemere FROM: Windemere	45 45 45	2.0 2.0	71 65	0	0	60 0	153 49	329 134
WITH PROJECT 30,200 W/O PROJECT 18,500 TO: County Line	50 50 50	2.0 2.0	75 73	0	51 31	137 98	295 213	636 459
5 COUNTRY LOOP RD. FROM: Camino Tassajara								
WITH PROJECT 9,600 W/O PROJECT 0 TO: Johnston FROM: Johnston	30 30 30	1.0 1.0	64	0	0	0	40	118
WITH PROJECT 3,700 W/O PROJECT 0 TO: Highland FROM: Highland	30 30 30	1.0 1.0	60 0	0	0	0	0	49
WITH PROJECT 5,000 W/O PROJECT 0 TO: Camino Tassajara	30 30 30	1.0 1.0	61 0	0	0	0	0	67 0

Appendix D (cont'd)

	SPEED	TRUCK%	Ldn @				SE NCE(F	EET)
ADT	AU MT HT	MT HT	50'	80	75	70	65	60
6 CROW CANYON RD. FROM: Camino Tassajara WITH PROJECT 53,000	40 40 40	2.0 2.0	75	0	54	143	307	662
W/O PROJECT 48,000 TO: Dougherty FROM: Dougherty			75	Ö	49	134	288	620
WITH PROJECT 35,700 W/O PROJECT 30,400 TO: Shoreline Dr. FROM: Shoreline Dr.	40 40 40	2.0 2.0	74 73	0	36 31	110 98	236 212	509 457
WITH PROJECT 39,000 W/O PROJECT 34,200 TO: Alcosta	40 40 40	2.0 2.0	74 73	0	40 35	116 107	251 230	540 495
7 DOUGHERTY RD.								
FROM: Crow Canyon WITH PROJECT 49,800 W/O PROJECT 49,100 TO: Bollinger Canyon	45 45 45	1.0 1.0	75 75	0	55 54		312 309	672 666
FROM: Bollinger Canyon WITH PROJECT 21,400 W/O PROJECT 20,100 TO: Windemere	45 45 45	1.0 1.0	72 71	0	0	75 70	178 170	383 367
FROM: Windemere WITH PROJECT 42,900 W/O PROJECT 36,200 TO: Old Ranch FROM: Old Ranch	45 45 45	1.0 1.0	75 74	0	47 40	131 117	282 252	608 543
WITH PROJECT 34,500 W/O PROJECT 33,000 TO: County Line	45 45 45	1.0 1.0	74 74	0	38 37	113 110	244 237	526 511
8 HIGHLAND RD.								
FROM: Camino Tassajara WITH PROJECT 13,450 W/O PROJECT 13,350 TO: Collier Canyon	50 50 50	1.0 1.0	71 71	0	0		156 155	
FROM: Collier Canyon WITH PROJECT 11,500 W/O PROJECT 12,950 TO: Livermore Ave.	50 50 50	1.0 1.0	70 71	0	0		140 152	302 327

Appendix D (cont'd)

	SPEED	TRUCK%	Ldn @	CONT		n NOI DISTA	SE NCE(F	EET)
ADT	AU MT HT	MT HT	50'	80	75	70	65	60
10 OLD RANCH RD. FROM: Alcosta WITH PROJECT 18,800 W/O PROJECT 14,300 TO: Dougherty	35 35 35	1.0 1.0	69 67	0	0	36 27	108 86	234 195
11 TASSAJARA RD. FROM: County Line WITH PROJECT 30,200 W/O PROJECT 18,500 TO: I-580	50 50 50	2.0 2.0	75 73	0	51 31	137 98	295 213	636 45 9
12 WINDEMERE PKWY. FROM: Dougherty WITH PROJECT 23,500 W/O PROJECT 18,000 TO: Bollinger Canyon FROM: Bollinger Canyon	35 35 35	1.0 1.0	69 68	0	0	45 34	126 105	271 227
WITH PROJECT 26,700 W/O PROJECT 18,000 TO: Camino Tassajara	35 35 35	1.0 1.0	70 68	0	0	51 34	137 105	295 227

APPENDIX E

AIR QUALITY METHODOLOGY AND ASSUMPTIONS

APPENDIX E AIR QUALITY METHODOLOGY AND ASSUMPTIONS

CALINE-4 MODELING

The CALINE-4 model is a fourth-generation line source air quality model that is based on the Gaussian diffusion equation and employs a mixing zone concept to characterize pollutant dispersion over the roadway.\(^1\) Given source strength, meteorology, site geometry and site characteristics, the model predicts pollutant concentrations for receptors located within 150 meters of the roadway. The CALINE-4 model allows roadways to be broken into multiple links that can vary in traffic volume, emission rates, height, width, etc.

The intersection mode of the model was employed, which distributes emissions along each leg of the intersection for free-flow traffic, idling traffic and accelerating and decelerating traffic. The intersection model extended 500 meters in all directions. Receptors (locations where the model calculates concentrations) were located at a distance of 20 feet from the roadway edge for all four corners of the intersection and at locations 50 feet in either direction, for a total of 12 receptors. Figure E-1 is a schematic diagram showing the location of receptors.

The worst-case mode of the CALINE-4 model was employed. In this mode the wind direction is varied to determine which wind direction results in the highest concentration for each receptor. Emission factors were derived from the California Air Resources Board EMFAC-7F model. Adjustments were made for vehicle mix and hot start/cold start/hot stabilized percentages appropriate to each roadway. Temperature was assumed to be 40 degrees F.

The computation of carbon monoxide levels assumed the following worst-case meteorological conditions:

Windspeed: 1 mps Stability: F Category

Mixing Height: 1000 meters Surface Roughness: 150 cm

Standard Deviation of Wind Direction: 10 degrees

The CALINE-4 model calculates the local contribution of nearby roads to the total concentration. The other contribution is the background level attributed to more distant traffic. The assumed 1-hour background level was 3.5 PPM and the 8-hour background level was 2.3 PPM in 2010. These background concentrations were developed using carbon monoxide background levels and correction factors for future years recommended by the BAAQMD. To generate estimates of 8-hour concentrations from the 1-hour CALINE results, a persistence factor of 0.7 was employed.

California Department of Transportation, CALINE-4 - A Dispersion Model for Predicting Air Pollutant Concentrations Near Roadways, Report No. FHWA/CA/TL-84-15, 1984.

URBEMIS-5 MODEL

Estimates of regional emissions generated by project traffic were made using a program called URBEMIS-5. URBEMIS-5 is a program that estimates the emissions that would result from various land use development projects. Land uses can include residential uses such as single-family dwelling units, apartments and condominiums, and nonresidential uses such as shopping centers, office buildings and industrial parks. URBEMIS-5 contains default values for much of the information needed to calculate emissions. However, project-specific, user-supplied information can also be used when it is available.

The following is a description of the parameters that were used in the regional air quality analysis of the proposed project:

- Ambient Temperature: 75 degrees F.
- Trip Lengths:

Home-Based Work: 16.7 Home-Base Shop: 10.2 Home-Based Other: 12.8 Work: 10.1 Non-Work: 15.2

Year of Analysis: 2010

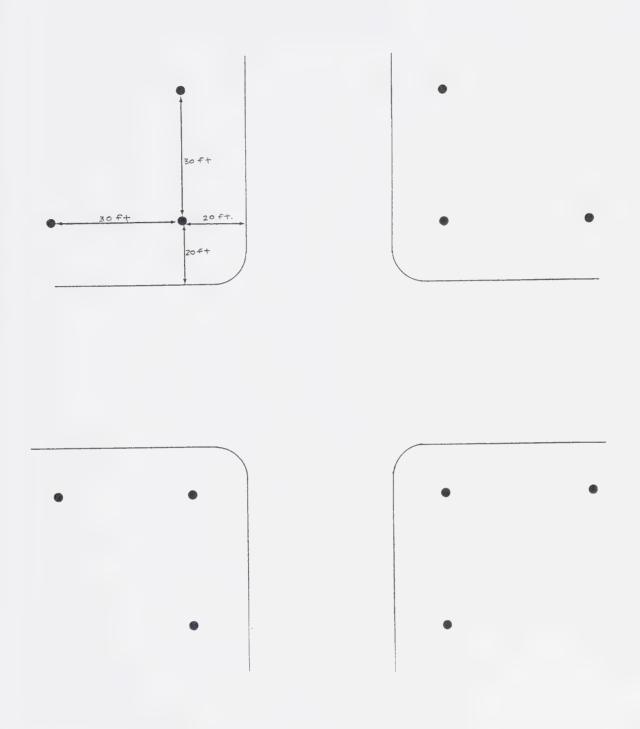
• Average Speed: 35 miles per hour for all trip types.

Trip lengths were taken from Metropolitan Transportation Commission travel statistics for the Danville-San Ramon Superdistrict and Contra Costa County.²

Five additional miles were added to each trip type to account for the relative isolation of the project site from major transportation corridors.

An adjustment was made to the URBEMIS-5 output. The URBEMIS-5 program generates estimates of Total Organic Gases rather than Reactive Organic Gases. Reactive Organic Gases were assumed to equal 91% of the Total Organic Gases.

Metropolitan Transportation Commission, Bay Area Travel Forecasts, Congestion Management Program Databook #1: Regional Summary, 1991.



IGURE E-1 LOCATION OF CALINE-4 RECEPTORS

urce: Donald Ballanti

Not to Scale

APPENDIX F

PHOTOMONTAGE DESCRIPTION AND METHODOLOGY

APPENDIX F

PHOTOMONTAGE SELECTION AND METHODOLOGY

VIEWPOINT SELECTION

Five viewpoints were selected for the Tassajara Valley Plan EIR photomontage analysis to provide EIR reviewers and the general public with representative views of the project site and the project (both as proposed and with the low density alternative).

The EIR team, including Contra Costa County staff, the EIR consultant (Mills Associates), and the photomontageconsultant (Henderson & Associates), along with project sponsor representatives, met three times (including a project site field trip) to determine the photomontage viewpoints. After the initial orientation field trip, twelve potential viewpoints were selected. Photographs from the twelve locations were then made to enable the EIR team to select the best five viewpoints.

The criteria used for the final selection of five photomontage viewpoints included the following:

- All major zoning classifications should be represented.
- A view showing the proposed golf course and the residential development areas in context with the existing Blackhawk development should be depicted.
- The five views should be distributed throughout the Tassajara project area.
- A view showing the probable Dougherty Valley connecting highway should be depicted.
- At least one view should show a new-town development area.
- All views should show, as clearly as possible, the extent of grading and the new shape of the topography.
- Where homes would likely be built on ridgelines, the extent to which those homes would break the sky-terrain interface should be shown.
- Views must be publicly accessible or be representative "vistas" from ridgelines and/or mountain tops.

Viewpoints had to be carefully selected to satisfy the criteria. Weight was given to those viewpoints with the highest potential visual impact (worst-case scenario).

METHODOLOGY

The photomontages created for the Tassajara General Plan Amendment EIR depict a wide angle field-of-view (70°). This angular view is roughly equivalent to the field of view of the human eye, including normal peripheral vision.

To view the photomontages so that they most accurately portray the view as seen from the selected viewpoints, hold the photomontages as close to the eyes as possible (while maintaining focus) so that the photomontage fills the field of view (a distance of eight inches is optimal). In this way, the perspective and relative sizes of proposed structures will be most accurately portrayed. If the photomontages are viewed from a distance of 18 to 24 inches, proposed buildings and other structures will appear smaller in view than they would appear from the viewpoints.

To date, no plans for individual houses have been developed for the Tassajara project area. Therefore, photographs from typical new structures in the Northern California region have been used in the creation of the photomontages. This was accomplished via the following procedure:

- Photographs from selected viewpoints were digitally scanned and inserted into a computer.
- Computer-generated, including roads and building pads, were produced for the same viewpoints as the field photography. These renderings accurately depict the position of all objects in the computer model as they would appear from the selected viewpoints.
- The renderings were scaled and inserted into the field photography using image processing techniques.
- Photographs of representative structures in Tassajara Valley were then scaled and digitally superimposed over the rendered computer models. Three dimensional computer models of prototypical structures were inserted in the middle of each of the building pads. Photographs were selected to portray similar perspectives and lighting characteristics as shown on the rendered computer model.
- Landscaping, grading, driveways and other features of the proposed subdivision were likewise borrowed from photographs of similar subdivisions and inserted into the photomontages to more accurately portray the likely visual character of the Tassajara project area at full buildout.

APPENDIX G

JOBS/POPULATION/HOUSING TECHNICAL INFORMATION



Jobs/Housing Model Inputs

The housing need of new employees projected for the proposed project and surrounding Tri-Valley subareas is estimated using a projection of employment by standard industry and occupational groups. For the Tri-Valley subareas, the model uses the employment projection from the Expected Growth Scenario. Estimates of the distribution of housing need by household income category are based on data from the 1990 U.S. Census (PUMS Sample A) data for workers in Contra Costa County.

Inputs to the model include data on the household income of employees working in each occupation in the major industrial groups, as follows:

- Agriculture
- Construction
- Manufacturing
- Transportation, Communication and Public Utilities (TCPU)
- Wholesale Trade
- Retail Trade
- Finance, Insurance and Real Estate (FIRE)
- Service
- Public Sector

Data obtained from the 1990 Census, which reports 1989 household incomes, are adjusted for inflation and real income changes so as to be equivalent to 1990 constant dollars.

Gateway Analysis

The demand for "imported" workers, and the corresponding commute demand on roadways will be influenced by both the income characteristics of the employment base and the relative affordability of housing in surrounding areas.

This gateway analysis assumes that a large portion of the proposed transportation capacity for the gateways will be used to bring workers to Tri-Valley jobs, or carry Tri-Valley employed residents to their places of work, or on non-work-related trips through the gateways. About 40 percent of future incommuters will be attracted from residential areas in Eastern Contra Costa County and the Central Valley, where existing and planned housing is more affordable than the Tri-Valley.

Gateway capacities are estimated assuming all anticipated improvements to the existing freeway and road system. It is assumed that an additional 9,000 workers would arrive via public transit, after BART is extended to the Tri-Valley area. It is further assumed that automobile occupancy would average 1.25 workers per vehicle. Road capacity is assumed to be design capacity, which is the threshold between level of service (LOS) E and F. At LOS F, traffic is characterized by intolerable delays and stop and go conditions. To the extent that LOS F conditions prevail, commuters and employers are more likely to choose alternative locations.

Under 1989 conditions, 39,000 commuter vehicles passed through the four Tri-Valley gateways, carrying about 49,000 workers (TJKM Transportation Consultants, as cited in EPS, 1990). The transportation network when fully improved is assumed to have an estimated capacity for 114,000 commuters at the Tri-Valley gateways, including rail transit riders. Assuming pass-through trips remain at the same percentage of total trips, or about 21 percent overall as estimated in 1989 by the Metropolitan Transportation Commission (EPS, 1990), there would be capacity for a total of about 92,000 total in-commuters to the Tri-Valley.

ABAG Projections vs. Technical Advisory Committee's "Expected Growth Scenario"

This document relied upon 1990 base-year estimates and year 2010 projections from the Technical Advisory Committee's (TAC) Expected Growth Scenario. These projections differ somewhat from those created by the Association of Bay Area Governments (ABAG), particularly in assumptions about infrastructure constraints, and trends in household size.

ABAG projects employment and population growth for all cities and counties of the San Francisco Bay region. The projections depend upon assumptions about birth and death rates, land availability and zoning, the strength of various economic sectors at the regional, State, and federal levels, and patterns of in and out migration. The Technical Advisory Committee (TAC) to the Tri-Valley Transportation Council (TVTC) also has prepared an "Expected" growth scenario for the Tri-Valley, reflecting the current knowledge of proposed projects and anticipated growth trends by the member jurisdictions of the council.

The TAC expected growth forecasts to the year 2010 differ from both prior Contra Costa Transportation Authority (CCTA) forecasts (which comply with ABAG *Projections '90*) and from ABAG's *Projections '94* forecasts. Unlike ABAG, the TAC forecasts are specifically intended for the analysis of the year 2010 Tri-Valley transportation network, assuming improvements will be limited to projects where funding is relatively certain. Transportation modeling for the TVTC is currently being conducted by the firm of Barton-Aschman Associates, which provided Tri-Valley regional and planning area projections for use in the jobs/housing analysis describe herein.

The Expected Growth Scenario projections rely upon ABAG's *Projections '90* forecast that average household size in Contra Costa County would decline steadily from 2.69 residents per household in 1980 to 2.45 persons per household by 2010. ABAG revised this forecast in its *Projections '94* document, which forecasts relatively constant household population densities in Contra Costa County through the year 2010. The average household size forecast Countywide under *Projections '94* is only slightly less in 2010 (2.64) than for 1980 (2.69).

The difference in the assumed trend for household size, all other factors held constant, implies that year 2010 households under the Expected Growth Scenario might accommodate nearly eight percent fewer residents, and generate proportionally less demand for services and infrastructure, than if ABAG *Projections '94* household size trend lines were assumed. *Projections '94* forecasts 414,020 households in the County by 2010, as compared to 397,900 in *Projections '90*. The Expected Growth Scenario, including buildout of the proposed project, forecasts 409,804 Contra Costa County households by 2010, about one percent less than *Projections '94*.

APPENDIX H CULTURAL RESOURCES TECHNICAL INVESTIGATION

APPENDIX H

CULTURAL RESOURCES TECHNICAL INFORMATION

PREHISTORY

Investigation into the prehistory of Central California did not begin in earnest until the 1920s. Stockton-area amateur archaeologists J.A. Barr and E.J. Dawson excavated numerous sites and made substantial collections in the area from 1893 to the 1930s. Their work provided the basis for later development of a three-phased chronological sequence for the region (Ragir, 1972). Barr identified, on the basis of artifact comparisons, what he felt were two distinct cultural traditions; Dawson later refined the concept into a series of "Early", "Middle", and "Late" sites (Ragir, 1972; Schenck and Dawson, 1929). In addition, P.M. Jones, working as a representative of the University of California at Berkeley, conducted systematic excavations of sites in the Central Valley in 1900 (Jones, 1922).

In the 1930s and 1940s, J. Lillard and W. Purves of Sacramento Junior College developed a three-phase cultural sequence. Similar to Barr and Dawson's, this sequence was based on artifact and burial data and defined cultures as "Early" "Intermediate" and ""Recent" (Lillard and Purves, 1936). This system was refined over the next two decades and was expanded into what is now known as the Central California Taxonomic System (CCTS) (Lilliard, Heizer and Fenenga, 1939).

Much of the subsequent archeological investigation in the Central Valley focused on refinement of the CCTS through analysis of such factors as environmental change, settlement and subsistence strategy, exchange, population movement, and other topics. These studies led to the establishment of subsequences for many regions of Central California, the most well-received of which has been Fredrickson's (1973) concept of cultural "patterns" (see also Moratto, 1984:201-214). The concept centers on the understanding that there were local variations to a widespread culture-horizon. As stated by the author:

A pattern is an adaptive mode extending across one or more regions, characterized by particular technological skills and devices, particular economic modes, including participation in trade networks and practices surrounding wealth, and by particular mortuary and ceremonial practices (Fredrickson, 1973:7-8).

The chronological sequence for the greater Sacramento River Delta region (including the Tassajara Valley area) begins with the *Windmiller Pattern* (encompassing what was referred to earlier as the Early and Middle Horizons). Sites from this period date from about 4500 to 2500 years ago. Although earlier sites no doubt exist, sites from the "Paleo-Indian Period", dating from about 10,000 to 4500 years ago, are thought to be buried under Holocene alluvial deposits and are not well documented in this part of California (Ragir, 1972). Various scholars have suggested *Windmiller* sites are associated with an influx of peoples from outside of California who brought with them an adaptation to river-wetland environments (Moratto, 1984:207).

Of particular interest to the project area is the fact that Windmiller sites are often situated in riverine, marshland and valley floor settings, and atop small knolls above prehistoric seasonal floodplains. The variety of plant and animal resources within the immediate area would have attracted populations intent

on making efficient use of such resources. Most *Windmiller* sites have contained burials in what may be cemeteries. Typically, the remains are extended ventrally, oriented to the west, and contain copious amounts of mortuary artifacts. These artifacts often include large projectile points (spear or dart points) and a variety of fishing paraphernalia such as net weights, bone hooks, and spear points, as well as the faunal remains of large and small mammals. Seed-grinding implements at the sites show that gathering and processing of seed resources was also common, and other artifacts (e.g. charmstones, quartz crystals, abalone and <u>Haliotis</u> shell beads) suggest trade and a degree of ceremonialism were practiced.

The subsequent *Berkeley Pattern* (previously the "Middle Horizon") covers a period from about 2500 to 1500 years ago. This pattern overlaps somewhat with *Windmiller* attributes at the beginning and Late Prehistoric artifacts at the end. *Berkeley Pattern* sites are much more common and well documented, and therefore better understood, than *Windmiller* sites. The sites are distributed in more diverse environmental settings, although a riverine focus is common.

Deeply stratified midden deposits (resulting from generations of occupation) are common to *Berkeley Pattern* sites, as are an abundance of milling and grinding stones for the processing of vegetal resources. Projectile points are progressively smaller and lighter over time, culminating in the introduction of the bow-and-arrow during the late prehistoric period. As mentioned above, although there are shared traits with *Windmiller* manifestations, artifacts unique to *Berkeley Pattern* sites include slate pendants, steatite beads, stone tubes and ear ornaments, and, most importantly, burial techniques utilizing variable directional orientation, flexed body positioning, and a general reduction of mortuary goods (Fredrickson, 1973; Moratto, 1984).

The late prehistoric period (formerly the "Late Horizon") ranges from about 1500 to 150 years ago. This period is characterized as the *Augustine Pattern* (Fredrickson, 1973). This pattern is typified by intensive fishing, hunting and gathering, the latter focusing on acorns, a large population increase, increased trade and exchange networks, increases in ceremonial and social attributes, and the practice of cremation (in addition to flexed burials). Certain artifact types also typify the pattern: bone awls for use in basketry manufacture, small notched and serrated projectile points indicative of introduction of the bow-and-arrow, occasional pottery, clay effigies, bone whistles, and stone pipes. The *Augustine Pattern* and the late prehistoric period can be characterized as the apex of Native American cultural development in this part of California.

In the vicinity of the project area, professional archaeological investigations have primarily occurred within the past thirty years. The impetus for these investigations was provided by environmental law, which served to direct archaeological investigation in the Central Coast and San Francisco Bay regions away from the popular coastal and bayshore midden sites toward areas not previously scrutinized.

The general San Ramon Valley region provided an attractive location for prehistoric settlement. Significant prehistoric archaeological sites have been located in the Walnut Creek, San Ramon Creek and Tice Creek areas. Excavations at sites Ca-CCo-30 (La Serena), Ca-CCo-308 (Stone Valley), CA-CCo-309 (Rossmoor), and CA-CCo-311 (Alamo) have demonstrated prehistoric activity in the area as early as 1000 B.C. (Fredrickson, 1974) and as late as 1700 A.D. (Banks and Morris, 1981). Ca-CCo-308 is of particular interest as it contained a blend of *Windmiller* and *Berkeley Pattern* traits. The large area of the site may suggest a sedentary village occupation that dates to between circa 2500 B.C. and A.D. 1 (Moratto, 1984). A more recent discovery, Ca-Ala-413, is a prehistoric site located near an extensive

marsh area, known in historic times as Willow Marsh, that became a seasonal lake during winter months (Banks and Morris, 1981).

Fredrickson has summarized the findings of these sites and developed a sequence of cultural change (Fredrickson, 1980). He suggests that the earliest inhabitants of this area were completely dependent on local resources. Those artifacts that were imported originated from a wide variety of sources, which suggests that trade was random and that no trade networks had been established. This early society appears to have been egalitarian, as its burials were non-differentiated, that is, interments were consistent in both the quantity and type of mortuary goods selected to accompany the deceased. During the subsequent two millennia, both social and economic networks expanded, leading to specialization of production and to fixed trading relationships. As trade increased and became more integral to the society, the status and wealth of those controlling the factors of production increased as well. Wealth, ascribed status, and prestige are seen in the differential mortuary complexes of burials dating to the later periods.

ETHNOGRAPHY

It is unclear from the existing scholarly information exactly which ethnographic group occupied the Tassajara project area during protohistoric times. In fact, either of two primary groups, the Ohlone and the Bay Miwok, and several of their smaller political groups or tribelets (the Seunen, the Chochenyo, the Wolwon [or Volvon], or the Saclan) may have occupied the area.

Some scholars (Banks and Morris, 1981; Roop and Flynn, 1981) feel the area included in the Tassajara Project probably belonged to the Seunen tribelet of the Ohlone. The Seunen are thought to have had territory which was originally centered around present-day San Ramon. According to Banks and Morris (1981:6), their territory may have extended as far north as the upper reaches of San Ramon Creek, just north of Danville, and south to the vicinity of Dublin. According to Roop and Flynn (1981:6) Seunen people were found a mile southwest of the project area, but by the mid-1850s this group was so disorganized by the depredations of military and settler activity that tribal distinctions were soon forgotten, and many different refugee populations intermixed in the hills. This may explain some of the confusion in the literature as to who resided in the Tassajara project area.

Other scholars (Gerike and Stewart, 1982:4; Busby, Garaventa and Yelding-Sloan, 1992:2), suggest the project vicinity was split between the Chochenyo (Ohlone) and the Wolwon (Bay Miwok); apparently the project area was situated on or near the boundary of these groups. Alamo Creek/San Ramon Creek may have served to form this boundary. Lastly, other scholars suggest the area may have been either Wolwon (Banks, 1980) or Saclan (Bay Miwok) or somehow divided between the two (Baker, 1990).

The Ohlone Tribelets: Seunen and Chochenyo

Two Ohlone tribelets that may have occupied the area were the Seunen (Sewnen) and Chochenyo, who spoke a dialect of what linguists refer to as Coastanoan (Banks and Morris, 1981; Banks, 1983). Two other Ohlonean' speaking groups were reported to have occupied neighboring areas: the Pelnen, a group who were centered in the Dublin-Pleasanton area, and the Souyen, who were centered in the Livermore area.

Seunen people of the San Ramon Valley, and the other Ohlonean groups, like Chochenyo people, were organized into political groups called tribelets. Each tribelet consisted of one or more villages and a number of additional camps within their territories (Levy, 1978a:487). Information provided by early Anglo explorers emphasizes the strong territorial boundaries held by these groups. The explorer Anza noted that when he reached the territorial limits of the Ohlone who accompanied his mission, they refused to step beyond the limits of their tribelet territory because of the hostility of the neighboring groups (Bolton, 1930: vol. 3:129).

Although tribelet chiefs could be either male or female, the office was usually inherited patrilineally from father to son. A chief's accession required the approval of the community. In addition to many assorted responsibilities to the community, the chief, along with the communities council of elders, served as an advisor to the tribelet. Reportedly, the Ohlone were independent in action, only obeying a higher authority in times of war (Levy, 1978a:487).

The Ohlone were divided into clans, that were then composed of individual households. These were large for California, averaging 10-15 person. Generally living in a domed, thatched structure, the Ohlone insured a continuous supply of plant and animal foods by carefully practicing land management through controlled burning (Levy, 1978a:490). Their diet mainly consisted of vegetal foods supplied by women who gathered seasonally-available staples such as acorns, greens, roots and bulbs and seeds. These resources were then supplemented by protein-rich faunal resources generally hunted by men (Banks and Morris, 1981:7).

The Bay Miwok: Wolwon and Saclan

The Wolwon and Saclan were members of the Bay Miwok; they spoke a language now considered one of the major subdivisions of the Miwok-Costanoan which belonged to the Utian family within the Penutian language stock (Shipley, 1978:82-84).

Similar to the Ohlone, the Miwok comprised a group of people united by language but broken into tribelets, each occupying defined territories over which they controlled access to natural resources. Extended families lived in domed, conical structures built of thatched grass. Semi-subterranean men's houses were built at the larger village sites, also using grass and earth cover (Kroeber, 1970). Scholars have suggested the early California environment offered a large assortment of resources for use by native people, although acorns, fish, and game mammals formed the staples of their diet (Baumhoff, 1963). Researchers have stressed that acorns, with various seeds, grasses, nuts, berries, and roots were of utmost importance, as plant food collection and preparation formed the center of Miwok technology (Bennyhoff, 1977:10; Kroeber, 1970:814-815; Gifford, 1916:139-194).

Given an abundant and continuous subsistence base, ceremony in Miwok life was fairly extensive, and scholars have written much about it based on early ethnographic accounts (Bennyhoff, 1977:11; Kroeber, 1970; Levy, 1978b). Rituals associated with death were of great importance. Two forms of interment were practiced and mortuary goods were often placed into the grave at the time of burial. Cremation was also occasionally practiced.

Native Peoples after the Arrival of the Spanish

The arrival of the Spanish in the San Francisco Bay Area in 1775 led to the rapid demise of native populations, including the Ohlone and the Bay Miwok. Diseases introduced by early expeditions and missionaries killed a large number of local peoples, exemplified by a mass burial of 18 individuals adjacent to the Hotchkiss Mound site near Oakley (Heizer, 1954). On an expedition through the Central Valley in 1832-1833, Ewing Young observed:

In the Fall of 1832....thebanks of the Sacramento River, in it's whole course through the valley, were studded with Indian villages....On our return, late in the summer of 1833, we found the valleys depopulated. From the head of the Sacramento to the great bend and slough of the San Joaquin, we did not see more than six or eight Indians; while large numbers of their skulls and dead bodies were to be seen under almost every shade-tree near water, where the uninhabited and deserted villages had been converted into graveyards....(Cook, 1955:318).

With abandonment of the Mission system and Mexican takeover in the 1840s, numerous Ranchos were established. What few Indians remained were then forced, by necessity, to work for the Ranchos. The native lifestyle in much of Northern California ceased to exist by the mid-19th Century, and most of the native population vanished with it.

For further ethnographic information on the Bay Miwok and Ohlone, refer to Levy (1978a; 1978b).

HISTORY

The history of Northern California, Contra Costa County, and the Tassajara Project area in particular, can be divided into several periods of influence. For the purposes of establishing a historic context from which to assess the potential significance of historic sites in the Project area, various periods and local sub-periods, some of which overlap, are defined below.

Due to its distance from San Francisco Bay, the project area was largely isolated from the Spanish and Mexican periods of California. Therefore, events associated with the Spanish and Mexican periods, and cultural remains from those periods, are not expected to be reflected in the Tassajara Project area but are discussed briefly as a point of reference:

Spanish Period (in California)1775-1822Mexican Period1822-1848American Period1848-present

Spanish Period (in California)

The name "Tassajara" is a corruption of the Spanish words "tasajo", which is the name for jerked or hung beef, and "tasajera" which is the place where jerked beef is hung to cure (Hoover, et al, 1990). It is thought to have originated from the Native Californian's who inhabited the area in the early 1800s.

These original inhabitants were believed to have preferred a hunting subsistence strategy to that of agriculture.

The earliest overland exploration of Contra Costa County was that of the Fages-Crespi Expedition in 1772. Travelling through what is now Milpitas, San Lorenzo, Oakland, and Berkeley, the party reached Pinole on March 28, 1772 (Cook, 1957:131). From there they travelled through Rodeo and Crockett to Martinez, made a brief foray into the delta region of the Central Valley and then camped near present-day Pittsburg or Antioch. On March 31, Fages and Crespi decided to return to Monterey. They travelled to Walnut Creek, turned south, then made their way to Danville, where they spent the night. On April 1st they passed through San Ramon and Dublin to reach Pleasanton. On April 2 they arrived back in the area of Milpitas.

In his journal, Crespi describes the land in the Tassajara Project vicinity as "covered with grass with the stream beds overgrown with alders, cottonwood, laurels, roses, and other shrubs" (Cook, 1957:132). Crespi further noted in his diary that "... between Danville and Pleasanton there were numerous villages of very gentle and peaceful heathen, many of them of fair complexion." (Cook, 1957:132).

The Anza-Font Expedition reached the East Bay hills in March 1776 by following a route similar to that of the earlier Fages-Crespi Expedition. Based on analysis of the detailed travel notes from the Fages-Crespi Expedition, Cook (1957) contends that the vegetation described in 1776 was substantially the same as that described in the 1850s by early settlers and not unlike that which is found today. He further suggests that the water supplies, such as creeks and streams, were similar to those of today.

Regarding the distribution of Native American population, Cook writes:

On the return journey, Crespi traversed the valley from Walnut Creek to Dublin, Pleasanton, and near Niles, and noted a scattering of rancherias at least as far as Pleasanton. ...it is clear that the heavy concentration of population was along the Bay shore, locally centering on the large arroyos and avoiding the strip where Oakland and Berkeley now stand. Secondary centers were in the broader and lower interior valleys, west and north of Mt. Diablo. The narrow canyons and the brush-covered belts of the main axis of the Coast Range were destitute of inhabitants (Cook, 1957:136).

In 1775, Captain Juan Manuel Ayala's expedition explored the San Francisco Bay and ventured up the Sacramento and San Joaquin Rivers in search of suitable mission sites. The first mission in the region was established the following year (1776) with the completion of Mission San Francisco de Asis (Mission Dolores) in San Francisco. It was followed three months later by Mission Santa Clara de Asis and in 1797 with the Mission San Jose de Guadalupe. The California Mission Era, which lasted over the next 46 years, led to the establishment of numerous missions and outposts. The "missionization" of native groups caused the decline and ultimately the decimation of the Native Califonians due to disease and subjugation. By 1810 virtually no Native American tribelets existed as separate political entities.

During the Spanish Period, many punitive and exploratory expeditions were made, both to search for runaway mission neophytes and to convert the "heathen" who had not yet been christianized. Several of these expeditions passed through or near the project area. Among these was the Pedro Amador Expedition of 1797. This expedition was organized to search for renegades who were inciting revolt among the christianized Indians of Mission San Jose. In his search Amador penetrated the area lying

between Mt. Diablo and the Livermore Valley (Cook, 1957). In 1805, Sergeant Luis Peralta, searching for the murderers of Padre Pedro Cuevas, passed near the project area when he entered the present-day town of San Ramon.

The Mexican Period

As the Mexican Period began, Indian resistance to the Spanish-Mexican governments had intensified to the extent that the "San Ramon Valley and the surrounding area was considered unsafe for permanent settlement" (L.G. Fink in Banks 1977:10).

The Mexican Period led to rapid secularization of the Spanish mission system until, by 1845, the last of the mission land holdings were relinquished, opening the way for the large ranchos common to California in the mid-1800s. The predominant land-use on the ranchos was ranching and livestock grazing. American explorers, mostly traders and beaver trappers, were also flocking to the west during this time, and their "trails" helped lead to the settlement of the territory (Kyle, 1990:preface).

After the break-up of the Spanish/Mexican mission system, some Native Californians returned to their homelands but most remained to work on the large ranchos. In 1834, a land grant encompassing the area from Dublin to San Ramon and from the western edge of the San Ramon Valley to Tassajara Creek was made to Jose Maria Amador. Entitled Rancho San Ramon, the grant contained 17,754 acres of land which supported in excess of 300 horses, 3,000 sheep, 13,000 head of cattle and provided work for 150 Mexican and Indian workers (Banks and Morris, 1981:12).

The arrival and proliferation of cattle and horses constituted one of the principal reasons for the disappearance of the California grasslands (Brown, 1985:88). By 1851, wild oats, an introduced species noted as an excellent livestock food, dominated the valleys and foothills of the Mt. Diablo area. Today, nearly 400 introduced species, mostly annuals carried from the Mediterranean by Spanish explorers, grow in California.

Agriculture and the consstruction of extensive irrigation systems has also changed the face of the native vegetation in much of the California grassland regions. Tomatoes, walnuts, almonds, and avocadoes are some of the crops now being produced in the land surrounding the project area.

The American Period

Deterioration of relations between the United States and Mexico resulted in the Mexican War, which ended with Mexico relinquishing California to the United States under the Treaty of Guadalupe Hidalgo of 1848. With the formation of the new State of California, and the onset of the American Period, rapid changes were in store for the region.

The discovery of gold in the Sierra Nevada in 1849 produced a major population increase in the northern half of California as emigrants sought gold or various jobs producing goods and providing services for miners. Land use changes resulted as livestock grazed most native grasses to extinction, woodlands were cut for lumber, railroad ties and mine timbers and agricultural development occurred on nearly all arable land.

During the early American period, Amador Valley and Sycamore Valley were notable for the production of wheat and orchard crops (Smith and Elliot in Gerike and Stewart, 1982:5). The rolling hills between these valleys provided excellent grazing for cattle and were cultivated with wheat, barley and hay (Gerike and Stewart, 1982:5). During the mid-nineteenth century, the Tassajara Valley was a major graingrowing region. Agriculture and the raising of livestock continue to be the area's principal economic pursuits (Baker, 1990).

Relevant to the project and representative of the early American Period are two standing structures immediately adjacent to the project area. The Tassajara School, located at the corner of Finley Road and Schoolhouse Road, is a one-room schoolhouse built in 1888 to replace a smaller school building constructed in 1865. The schoolhouse is in the process of being restored and is presently used for community events.

The Tassajara Post Office is still standing on the east side of Finley Road, about 1/8th of a mile North of Camino Tassajara. It was built as a farm utility building but was used as a post office beginning in 1896. In 1899, postal facilities were moved across the street into the newly constructed Anton Peterson home but the original post office building still stands.

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APPENDIX I

APPLICANT'S VIEWS REGARDING WATER AVAILABILITY AND SUPPLY ISSUES INVOLVING EBMUD AND TVPOA

WATER AVAILABILITY AND SUPPLY ISSUES INVOLVING EBMUD AND TVPOA AS PROVIDED BY TVPOA

The East Bay Municipal Utility District ("EBMUD") provides portable water to communities in both Alameda and Contra Costa County. Although EBMUD's present service area abuts the northwest boundary of the project area the project has not been annexed into EBMUD nor is it within EBMUD's ultimate service area boundary. Given its proximity to significant portions of the Project, EBMUD could be the least cost supplier (to at least the northern portion of the Project) in terms of infrastructure extension costs. However, as described later in this text many unresolved issues exist with regard to EBMUD's ability to adequately supply water to the project.

Virtually all of EBMUD's existing water supply comes from Pardee and Comanche Reservoirs on the Mokelumne River in the Sierra Nevada foothills and is transported to the East Bay area through the triple-pipeline Mokelumne Aqueduct. EBMUD has water rights for up to 364,000 afy from the Mokelumne River and an additional 150,000 afy from the American River. EBMUD's rights to this 364,000 afy is limited by storage constraints and the rights of more senior water rights holders on other Mokelumne and EBMUD projects that by the year 2020 they will have a deficit of 130,000 afy. American River water can only be diverted during the wet weather season and currently there are no existing storage or transport facilities available for this water source. EBMUD is currently studying alternatives for utilizing its American River supply. EBMUD is also proceeding with a future conjunctive use water storage project that consists of storing wet year Mokelumne River water in underground aquifers near Lodi. In dry years, San Joaquin County farmers and ranchers would use the stored groundwater, and EBMUD would be able to divert more Mokelumne River water through the Mokelumne Aqueduct for use in the East Bay area.

I. Distribution System

For the San Ramon Valley area, water from the Mokelumne Aqueducts is treated at the Walnut Creek Water Treatment Plant. The 80 mgd plant approaches capacity in the summer months, and an expansion of the plant is being evaluated as part of the District's San Ramon Valley Water Service Facilities Master Plan and Program EIR. The possibility of a second water treatment plant and attendant conveyance facilities, as well as additional storage, pumping, and pipeline transmission capacities needed to meet customer demand within the USB in the San Ramon Valley area, are also being evaluated. The study is considering near-term projects (those needed within the next five to ten years) and long-term projects (those needed by the year 2020). EBMUD will also evaluate the impact of possibly extending water service beyond the Ultimate Service Boundary but within the Contra Costa Urban Limit Line. (EBMUD, 1994)

From the Walnut Creek Plant treated water flows by gravity to the Danville pumping plant from which it is delivered to various pressure zones. The project site is within the elevation range of the San Ramon, Blackhawk and Diablo Scenic Pressure Zones. The nearest distribution main to the project site

¹ EBMUD provides water service via standardized pressure zones. A pressure zone is an area within a specified elevation range (e.g., 250-450 feet) where storage and distribution facilities are designed to deliver water at a pressure range suitable for customer use. A <u>pumping plant</u> is a unit that pumps water through a distribution system. Typically, pumping plants lift treated water uphill to reservoir tanks from which it can be delivered by gravity to the consumer.

is in Camino Tassajara Road. The main is 24 inches in diameter where it reaches the western edge of the Project. Capacity in the main has not been allocated to serve the project site because it is outside the USB.

The projected water demand for the proposed project at buildout using some typical water use factors experienced in EBMUD's service area is presented in Table 4.9-3 in the EIR (Section 4.9). The water use factors for very low and low density single-family residential and medium density multiple-family residential land uses are typical for the San Ramon portion of EBMUD's service area (Hanoian, 1994). The water use factors for the intermediate residential land uses were derived proportionally based on acreage per dwelling unit.

The EBMUD Board has adopted a policy (Policy 51) not to extend its ultimate service area boundary prior to the establishment of a long term water supply which can insure that water demands of present and future costumers within its existing ultimate service area boundary can be satisfied without additional cost or diminution of water quality. The Environmental Impact Report (EIR) for EBMUD's 1993 Updated Water Supply Management Program includes an analysis that indicates EBMUD does not currently have an adequate, reliable supply in the future, even for current customers, particularly during drought years. In addition, EBMUD staff believes that Federal and State agencies may adopt regulations that will require increased water releases to protect and restore fisheries in the Mokelumne River, the Sacramento-San Joaquin Delta and San Francisco Bay. (Lampe, 1993; Hanoian, 1994) Therefore, EBMUD will not extend its ultimate service area boundary to include the project until additional reliable water sources can be developed or acquired.

It should be noted that by letter of November 5, 1996, Contra Costa County requested EBMUD to initiate the process for the preparation of a Miscellaneous Work Agreement to identify and analyze general and specific water system improvements needed should EBMUD become the service provider within the "logical boundary extension that would include the Wendt Property, Tassajara Meadows and the property (included within the TVPOA Project) lying within the two sites." Since the date of this letter the Wendt Project has been approved by the Board of Supervisors and the Tassajara Meadows project has been approved by the County Planning Commission.

If the project were annexed to EBMUD without the provision of additional water supplies, the following significant adverse effects could occur.

- 1. The price and scarcity of water to the District's existing costumers would increase, especially in drought year conditions. A shortage of water could force the District to impose water rationing above 25 percent. The Updated Water Supply Management Program (WSMP)(P.IV 23-24) indicates that imposition of a 35 percent cut-back level in response to the 1976-1977 drought and resulting reduction in landscape irrigation resulted in the loss of landscaping and consequent reduction in customer property values.
- 2. The amount of water available for fire fighting and other emergencies would be reduced and drinking water quality could decrease because of increases in algae and turbidity as reservoir levels drop (WSMP p.54).
- 3. EBMUD could be forced to utilize Delta water sources which could damage treatment facilities as well as lower the water quality in EBMUD terminal storage reservoirs. (WSMP p. IV-26)
- 4. Migratory fish populations in the Mokelumne River would be adversely effected because instream flows would be decreased causing water temperature to rise and flow velocity to decrease. This

would increase fish mortality and decrease fish population. The reduction of in-stream flows could cause the District to violate the terms of its Pardee and/or Comanche Dam permit.

5. The riparian habitat along the lower Mokelumne River water system would be adversely effected because reduced water flows would simulate local drought conditions causing a reduction in riparian plant and animal populations.

These effects would be largely unavoidable, however mitigation measures likely will be developed in the process of further and more detailed environmental review.

II. Possible Actions for Increasing Water Supply

EBMUD's Water Supply Management Program identifies a number of project alternatives which would increase the quantity of high quality water available to meet the projected needs of EBMUD customers. Each of these alternatives has major institutional hurdles that must be overcome before a project can be realized. These alternatives are being pursued in parallel in a comprehensive strategy to increase the probability that one of them will be implemented.

1. Groundwater Storage/Conjunctive Use

One element of EBMUD's strategy (and currently the preferred action in the EBMUD Long Range Water Supply Management Program) is to develop a groundwater storage/conjunctive use program with San Joaquin County water users. This proposal would entail the storage of wet year Mokelumne River flows in a groundwater aquifer in eastern San Joaquin County. A portion of this water could be used to augment EBMUD's current supplies while the rest would be used to mitigate saltwater intrusion into the San Joaquin County aquifer. Preliminary estimates indicate that this program could result in 115,000 afy of extractable groundwater available to EBMUD in dry years; 65,000 afy more than is needed to meet projected demand. However, negotiations with San Joaquin County water users and other water utilities have not been completed and there remain a number of unresolved issues. Even under the most optimistic projections, this supply would not be available until after the year 2002.

2. Increase Capacity of Pardee Dam or other storage facilities

The second element of EBMUD's strategy is to increase storage capacity for Mokelumne River water by raising the level of the Pardee dam to create an additional 150,000 acre feet of storage capacity or by building a new reservoir at Middle Bar or on Duck Creek. This additional capacity would be sufficient to meet the projected year 2020 demand.

In November of 1995, the EBMUD Board determined that the project to raise the level of the Pardee Dam wassuperior to the other new surface storage construction projects and directed staff to prepare preliminary engineering studies and an environmental assessment on that alternative. As with the other activities being pursued to increase EBMUD supplies, there remain several unresolved issues with regard to this approach and implementing such an action would involve considerable capital expense. Construction of this potential improvement would not commence before the year 2000 and the facility would not be operational before 2002.

3. Utilization of American River Water

The third element of EBMUD's strategy is to develop a mechanism to utilize its entitlement to 150,000 afy of American River Water. This entitlement is restricted by the ruling of Judge Hodge of the Alameda County Superior Court in his 1990 decision in EDF v. EBMUD ("Hodge Decision") which requires EBMUD to restrict its diversion of American River water during dry years in order to preserve flows in the lower American River for fisheries protection.

EBMUD is currently studying several options which would allow it to utilize this water source. It is examining the possibility of diverting American River water via the Folsom South canal above the lower reach of the American River. This option would require either a 32 mile pipeline from the EBMUD turnout on the Folsom South canal to the Mokelumne Aqueduct or a 16 mile pipeline from the end of the Folsom South canal to the Mokelumne Aqueduct. Both of these options would require regulatory approval and a complete CEQA analysis.

4. Sacramento Water Forum

In response to the concerns of lower American River water users and environmental interests, EBMUD has been engaged in discussions with representatives of the "Water Forum", a voluntary conference of Sacramento area water interests. The Water Forum includes more than 45 individual organizations with an interest in water from the Sacramento/American River watershed. These organizations, which are organized into six interest groups, have been negotiating since 1993 towards forming a cooperative strategy concerning the utilization of the Sacramento/American River water resource. In 1994, the Forum adopted two goals which are to "provide a reliable and safe water supply for the region's economic health and planned development through the year 2030" and to "preserve the fishery, recreational, and aesthetic values of the Lower American River." The Forum is now in the process of adopting specific strategies and projects which would fulfill these goals. A final agreement is expected in the fall of 1996.

Among the alternatives the Water Forum is investigating is the possibility of a joint project with Sacramento County, the City of Sacramento and/or east San Joaquin water users to construct a diversion from the American River. Various diversion points between Nimbus and I-5 bridge are being considered. This project would entail the development of both transport and storage facilities for American River water and would yield water of a somewhat lower quality than that available from EBMUD Mokelumne system. In any case, because of the need to construct delivery facilities, this water would not be available for delivery to EBMUD customers until sometime after the year 2000.

If EBMUD were to agree to a diversion point on the American River below Nimbus, it might potentially have access to a greater amount of its American River water entitlement during dry years. Such diversion might not be subject to the limitations imposed by the Hodge Decision.

5. Natomas Mutual

Natomas Mutual Water District (Natomas) has up to 30,000 afy of excess surface water entitlements from the Sacramento River that it has preserved through conservation efforts. The project applicants have contacted Natomas and have entered into a Memorandum of Understanding regarding a possible transfer of a portion of Natomas' rights to Sacramento River water to accommodate the water supply needs of TVPOA on a long term basis. It may be possible for Natomas to transfer a portion of its Sacramento River water entitlement to the Woodbridge Irrigation District. Woodbridge has an entitlement to water from both the Sacramento River and the Mokelumne River. Under this scenario Natomas would "wheel" a portion of its Sacramento River water to Woodbridge and in exchange Woodbridge could release a

portion of its Mokelumne River Water to EBMUD. EBMUD would then be able to withdraw additional Mokelumne River water for its customers and potentially the Tassajara Valley project. The project applicant has been in contact with the Woodbridge Irrigation District, but as of this date there have been no agreements reached.

Both of these options would need to be fully analyzed in the CEQA document prepared for any potential American River diversion project.

6. Potential Acquisition of I Water Rights

In addition, it is technically possible to increase the amount of water available to EBMUD through the direct purchase of entitlements from other Mokelumne River water users. EBMUD is not currently pursuing this option, however, the project proponents have made contact with several users of Mokelumne River water. As of yet, there have been no commitments made by any of these users to transfer water entitlements to either EBMUD or directly to the project proponents and there is no assurance that such an arrangement will materialize. If an agreement is obtained, it is anticipate that the project proponents would facilitate a water rights entitlement transfer to EBMUD similar to that between Dublin San Ramon Services District and Berrenda Mesa Water District. Such a transfer could also require regulatory approval by the State Board of Water Resources as well as potential additional environmental review.

III. Potable Water Distribution System - EBMUD

The EBMUD plan of services includes a preliminary water distribution plan. The distribution system provides service to the established EBMUD service zones in the following areas: 1) San Ramon Zone (service elevation 450-650); 2) Diablo Scenic Zone (service elevation 650-850); and 3) Blackhawk Zone (service elevation 850-950). Two local distribution storage tanks will be built in each of the San Ramon and Diablo Scenic zones and one in the Blackhawk zone. Water would be pumped from the lower to the higher zones by electric motor driven pumps. Welded steel tanks would be constructed at properly elevated positions (approximately 100 feet higher than the upper boundary of the pressure zone).

REFERENCES

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